Multi-Hazard Mitigation Plan

Christian County

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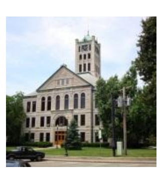

Emergency Service and
Disaster Agency
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Multi-Hazard Mitigation Plan

Christian County, Illinois

Adoption Date: -- ________________________ --

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Section 1 - Public Planning Process

1.1 Narrative Description

Hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000 (DMA 2000). The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program (NFIP) communities to be eligible for future mitigation funds, they must adopt an MHMP.

In recognition of the importance of planning in mitigation activities, FEMA created **Haz**ards **US**A **M**ulti-**H**azard (HAZUS-MH), a powerful geographic information system (GIS)-based disaster risk assessment tool. This tool enables communities of all sizes to predict estimated losses from floods, hurricanes, earthquakes, and other related phenomena and to measure the impact of various mitigation practices that might help reduce those losses. Southern Illinois University at Carbondale (SIU) and The Polis Center (Polis) at Indiana University Purdue University Indianapolis (IUPUI) are assisting Christian County with performing the hazard risk assessment.

1.2 Planning Team Information

The Christian County Multi-Hazard Mitigation Planning Team is headed by Mike Crews, who is the primary point of contact. Members of the planning team include representatives from various county departments, cities and towns, and public and private utilities. Table 1-1 identifies the planning team individuals and the organizations they represent.

Table 1-1: Multi Hazard Mitigation Planning Team Members

Name	Title	Organization	Jurisdiction
Greg Fuerstenau	School Superintendent	Christian County	Christian County
Mike Crews	ESDA Coordinator	Christian County	Christian County
Mickie Ryan	Administrator	Christian County 911	Christian County
Robert Kindermann	Sheriff	Christian County Sheriff's Office	Christian County
Cliff Frye		Christian County Highway Department	Christian County
Jim Jensen			City of Pana
Brian Hile	Deputy Chief	Taylorville Police Department	City of Taylorville
Dave Herpstreith	Chief	Taylorville Police Department	City of Taylorville
Fred Ronnow	President	Greater Taylorville Chamber of Commerce	City of Taylorville
Lora Polley		Taylorville Memorial Hospital	City of Taylorville

Name	Title	Organization	Jurisdiction
Rod Bland	Chief	Pana Fire Department	City Pana
Brad Sims	Chief	Pana Police Department	City Pana
Greg Hager	Emergency Department Manger	Pana Hospital	Pana Hospital
James Burnett	Emergency Preparedness Coordinator	Pana Hospital	Pana Hospital
Pam Olmstead	City Clerk	Village of Assumption	Village of Assumption
Allan Hays	Mayor of Assumption	Village of Assumption	Village of Assumption
William Stender		Edinburg Fire Department	Village of Edinburg
Guy Choate	Assistant Fire Chief	Midland Fire Protection District	Village of Kincaid
Pat Durbin	Kinkaid Street Superintendent	Village of Kincaid	Village of Kincaid
Bill O'Connell	Morrisonville ESDA Coordinator	Village of Morrisonville	Village of Morrisonville
Marcia Rosenthal	Morrisonville ESDA	Village of Morrisonville	Village of Morrisonville
Larry Minott	Chief	Mowequa Fire Protection District	Village of Mowequa
Alvin Mizeur	Mayor of Owaneco	Village of Owanceo	Village of Owanceo
Sharon Hill		Village of Palmer	Village of Palmer
Jim Hill	Palmer Mayor	Village of Palmer	Village of Palmer
Jeff Tumiati	Super Public Works	Village of Stonington	Village of Stonington
Travis Peden	Chief	Stonington Police Department	Village of Stonington
Margaret Puccetti	Trustee of Tovey	Village of Tovey	Village of Tovey

The Disaster Mitigation Act (DMA) planning regulations stress that planning team members must be active participants. The Christian County MHMP committee members were actively involved on the following components:

- Attending the MHMP meetings
- Providing available GIS data and historical hazard information
- Reviewing and providing comments on the draft plans
- Coordinating and participating in the public input process
- Coordinating the formal adoption of the plan by the county

An MHMP kickoff meeting was held at the Taylorville Memorial Hospital on February 11, 2010. Representatives from Southern Illinois University explained the rationale behind the MHMP program and answered questions from the participants. The Polis Center also provided an overview of HAZUS-MH, described the timeline and the process of the mitigation planning project, and presented Christian County with a Memorandum of Understanding (MOU) for sharing data and information.

The Christian County Multi-Hazard Mitigation Planning Committee met on February 11, 2010, March 16, 2010, May 20, 2010, July 13, 2010, and September 1, 2010. Each meeting was approximately two hours in length. The meeting minutes are included in Appendix A. During these meetings, the planning team successfully identified critical facilities, reviewed hazard data and maps, identified and assessed the effectiveness of existing mitigation measures, established mitigation projects, and assisted with preparation of the public participation information.

1.3 Public Involvement in Planning Process

An effort was made to solicit public input during the planning process, and a public meeting was held on September 1, 2010 to review the county's risk assessment. Appendix A contains the minutes from the public meeting. Appendix B contains articles published by the local newspaper throughout the public input process and a local radio announcement.

1.4 Neighboring Community Involvement

The Christian County planning team invited participation from various representatives of county government, local city and town governments, community groups, local businesses, and universities. The team also invited participation from adjacent counties to obtain their involvement in the planning process. Details of neighboring stakeholders' involvement are summarized in Table 1-2.

Table 1-2: Neighboring Community Participation

Person Participating	Neighboring Jurisdiction	Organization	Participation Description
Jim Root	Macon County	Macon County Emergency Management Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
Dina Holmes	Montgomery County	Montgomery County Emergency Service and Disaster Agency	Invited to participate in public meeting, reviewed the plan and provide comments.
David Butt	Sangamon County	Sangamon County Office of Emergency Management	Invited to participate in public meeting, reviewed the plan and provide comments.
Gary Bryant	Shelby County	Shelby County Emergency Service and Disaster Agency	Invited to participate in public meeting, reviewed the plan and provide comments.

1.5 Review of Technical and Fiscal Resources

The MHMP planning team has identified representatives from key agencies to assist in the planning process. Technical data, reports, and studies were obtained from these agencies. The organizations and their contributions are summarized in Table 1-3.

Table 1-3: Key Agency Resources Provided

Agency Name	Resources Provided
Christian County Supervisor of Assessments	Parcel Map, Tax and Structure Data
Illinois Environmental Protection Agency	Illinois 2008 Section 303(d) Listed Waters and watershed maps
U.S. Census	County Profile Information, e.g. Population and Physical Characteristics
Department of Commerce and Economic Opportunity	Community Profiles
Illinois Department of Employment Security	Industrial Employment by Sector

NOAA National Climatic Data Center	Climate Data
Illinois Emergency Management Agency	2007 Illinois Natural Hazard Mitigation Plan
Illinois Water Survey (State Climatologist Office)	Climate Data
United States Geological Survey	Physiographic/Hill Shade Map, Earthquake Information, Hydrology
Illinois State Geological Survey	Geologic, Karst Train, Physiographic Division and Coal Mining Maps

1.6 Review of Existing Plans

Christian County and its local communities utilized a variety of planning documents to direct community development. These documents include land use plans, comprehensive plans, emergency response plans, municipal ordinances, and building codes. The planning process also incorporated the existing natural hazard mitigation elements from previous planning efforts. Table 1-4 lists the plans, studies, reports, and ordinances used in the development of the plan.

Table 1-4: Planning Documents Used for MHMP Planning Process

Author(s)	Year	Title	Description	Where Used
FEMA	1978	Christian County Flood Insurance Study	Describes the NFIP program, which communities participates; provide flood maps	Sections 4 and 5
Supervisor of Assessments	2009	GIS Database	Parcel and Assessor Data for Christian County.	Section 4
State of Illinois Emergency Management Plan	2007	2007 Illinois Natural Hazard Mitigation Plan	This plan provides an overview of the process for identifying and mitigating natural hazards in Illinois as require by the Disaster Mitigation Act of 2000.	Guidance on hazards and mitigation measures and background on historical disasters in Illinois.
City of Pana	2009	Code of Ordinances, City of nana	Contains City Ordinance	Section 5
City of Taylorville	2009	Taylorville City Codes	Taylorville City Code contains city ordinance up to and including ordinance 3452	Section 5
City of Taylorville	2006	City of Taylorville Comprehensive Plan	City of Taylorville Comprehensive Plan is a policy guide to decisions about the physical development of the community within in the next 10 to 20 years.	Section 3 and 5

Section 2 - Jurisdiction Participation Information

The incorporated communities included in this multi-jurisdictional plan are listed in Table 2-1.

Table 2-1: Participating Jurisdictions

Jurisdiction Name
Christian County
City of Taylorville
City of Pana
Village of Assumption
Village of Edinburg
Village of Kincaid
Village of Morrisonville
Village of Owaneco
Village Moweaqua
Village of Palmer
Village of Stonington
Village of Tovey

2.1 Adoption by Local Governing Body

The draft plan was made available on September 1, 2010 to the planning team for review. Comments were then accepted. The Christian County hazard mitigation planning team presented and recommended the plan to the County Commissioners, who adopted it on <date adopted>. Resolution adoptions are included in Appendix C of this plan.

2.2 Jurisdiction Participation

It is required that each jurisdiction participates in the planning process. Table 2-2 lists each jurisdiction and describes its participation in the construction of this plan.

Table 2-2: Jurisdiction Participation

Jurisdiction Name	Participating Member	Participation Description
Christian County	Mike Crews	MHMP planning team member
City of Taylorville	Dave Herpstrenth	MHMP planning team member
City of Pana	Rod Bland	MHMP planning team member
Village of Assumption	Pam Olmstead	MHMP planning team member
Village of Kincaid	Pat Durbin	MHMP planning team member
Village of Morrisonville	Bill O'Connell	MHMP planning team member
Village Moweaqua	Larry Minott	MHMP planning team member
Village of Owaneco	Alvin Mizuer	MHMP planning team member
Village of Palmer	Sharon Hill	MHMP planning team member
Village of Stonington	Jim Hill	MHMP planning team member
Village of Tovey	Margaret Puccetti	MHMP planning team member
Village of Edinburg	William Stender	MHMP planning team member

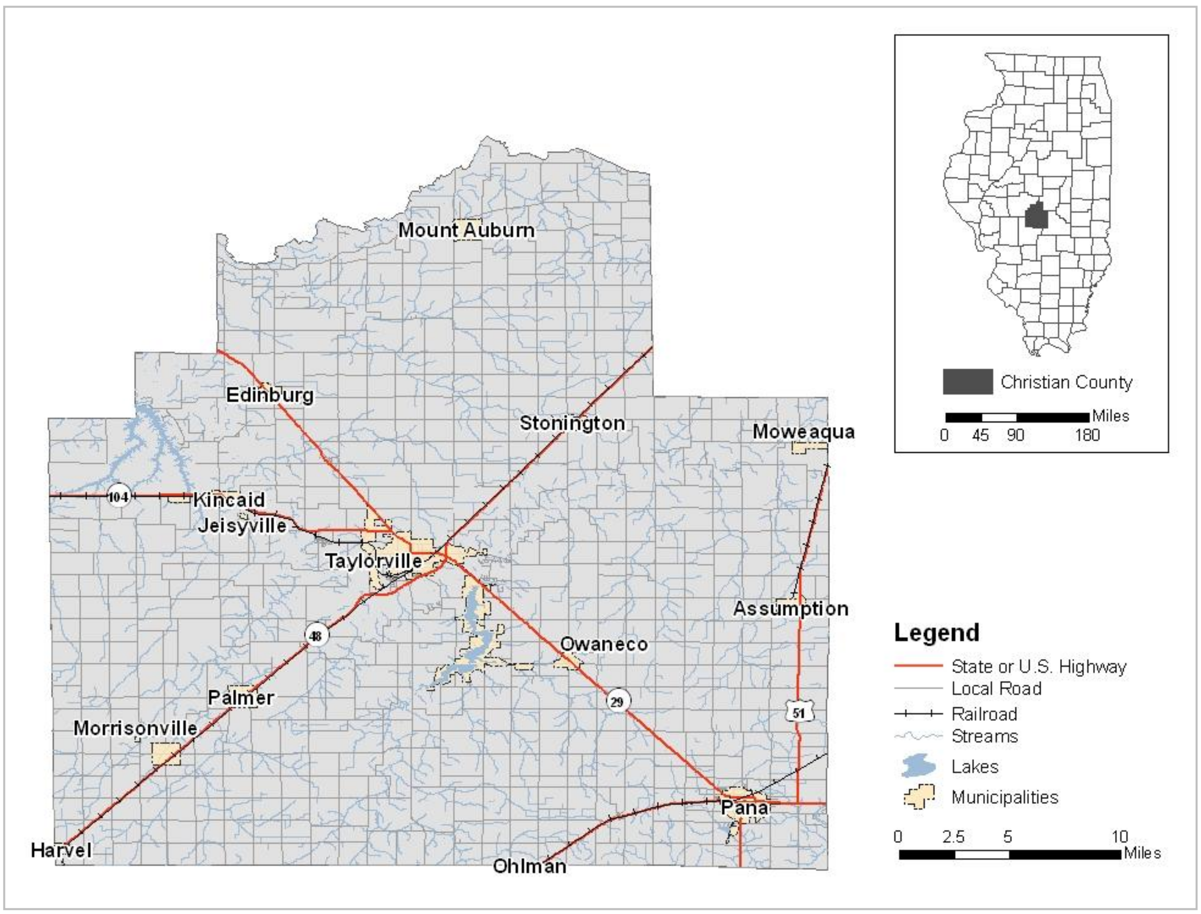
All members of the MHMP planning committee were actively involved in attending the MHMP meetings, providing available Geographic Information Systems (GIS) data and historical hazard information, reviewing and providing comments on the draft plans, coordinating and participating in the public input process, and coordinating the county's formal adoption of the plan.

Section 3 - Jurisdiction Information

Christian County was formed from parts of Macon, Sangamon, Montgomery, and Shelby Counties in 1839. The name first given to the County was Dane, in honor of Nathan Dane, one of the framers of the Ordinance of 1787. A political prejudice led to a name change, and since a large percentage of early settlers came from Christian County, KY, the current name was adopted. The City of Taylorville is the county seat.

Christian County is located in the central Illinois. The county has total land area of 710 square miles. It is bordered by Macon County in the northeast, Shelby County in the southeast, Montgomery County in the southwest, and Sangamon County in the northwest. Figure 3-1 depicts Christian County's location.

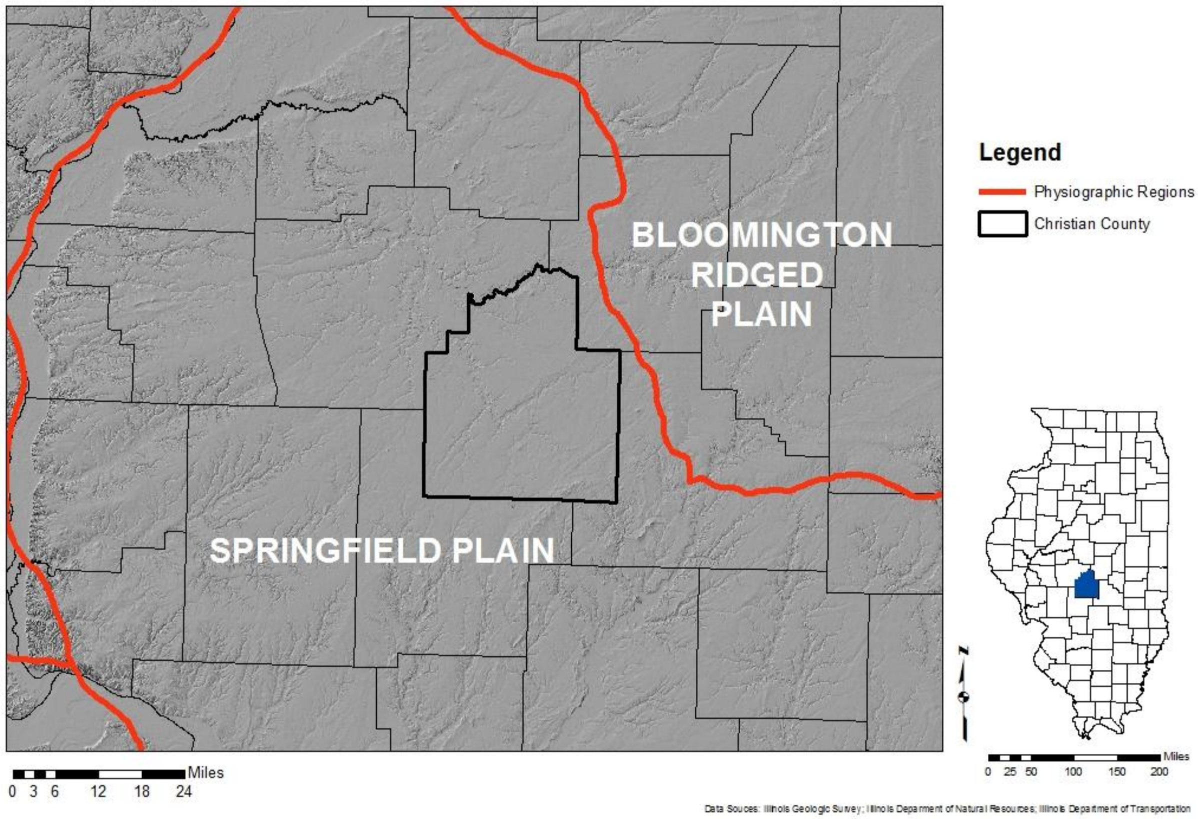
Figure 3-1: Christian County, Illinois



Sources:http://www.cyberdriveillinois.com/departments/archives/irad/Christian.html; http://www.fedstats.gov/qf/states/17000.html; http://factfinder.census.gov; http://www.genealogytrails.com

3.1 Topography

Christian County is situated in the Central Lowland Province of the Till Plains Section and lies entirely within the Springfield Plain physiographic division. Part of the county's northern border is defined by the Sangamon River. The Springfield Plain includes the level portion of the Illinois drift sheet in central and southern Illinois. It is characterized mainly by its flatness and by its relatively shallow entrenchment of drainage.



3.2 Climate

Christian County climate is typical of central Illinois. The variables of temperature, precipitation, and snowfall can vary greatly from one year to the next. Winter temperatures can fall below freezing starting as early as October and extending as late as April. Based on National Climatic Data Center (NCDC) normals from 1971 to 2000, the average winter low is 15.9° F and the average winter high is 40.2° F. In summer, the average low is 61.3° F and average high is 87.8° F. Average annual precipitation is 40.57 inches throughout the year.

3.3 Demographics

In 2000, Christian County had a population of 35,372. According to American FactFinder (2008), Christian County experienced a population decline of 1.03% from 2000 to 2008. The population is spread throughout 17 townships: Assumption, Bear Creek, Buckhart, Greenwood, Johnson, King, Locust, May, Mosquito, Mount Auburn, Pana, Prarieton, Ricks, Rosamond, South Fork, Stonington, and Taylorville. The largest community in Christian County is Taylorville, which has a population of approximately 11,427. The breakdown of population by township is included in Table 3-1. Townships containing incorporated communities are marked with an asterisk (*).

Table 3-1: Population by Township

Township	2000 Population	% of County
Assumption*	1,509	4.27
Bear Creek*	575	1.63
Buckhart*	1,868	5.28
Greenwood	232	0.66
Johnson	680	1.92
King*	264	0.75
Locust*	1,856	5.25
May*	1,436	4.06
Mosquito*	362	1.02
Mount Auburn*	1,031	2.91
Pana*	6,860	19.39
Prarieton*	492	1.39
Ricks*	1,272	3.60
Rosamond	400	1.13
South Fork*	2,969	8.39
Stonington*	1,180	3.34
Taylorville*	12,659	35.79

Source: American FactFinder, 2000

3.4 Economy

American FactFinder reported for 2000 that 76.5% of the workforce in Christian County was employed in the private sector. The breakdown is included in Table 3-2. Health care and social assistance represents the largest sector, employing approximately 21.8% of the workforce. The 2000 annual per capita income in Christian County is $20,679.

Table 3-2: Industrial Employment by Sector

Industrial Sector	% Dist. In County (2000)
Agriculture, forestry, fishing, hunting, and mining	4.7%
Construction	10.7%
Manufacturing	12.0%
Wholesale trade	4.3%
Retail trade	9.6%
Transportation, warehousing and utilities	6.0%
Information	1.7%
Finance, insurance, real estate, and rental/leasing	5.6%
Professional, technical services	5.9%
Health care, social assistance	21.8%
Arts, entertainment, recreation	5.0%
Public administration	7.1%

Source: American FactFinder, 2000

3.5 Industry

Christian County's major employers and number of employees are listed in Table 3-3.

Table 3-3: Major Employers

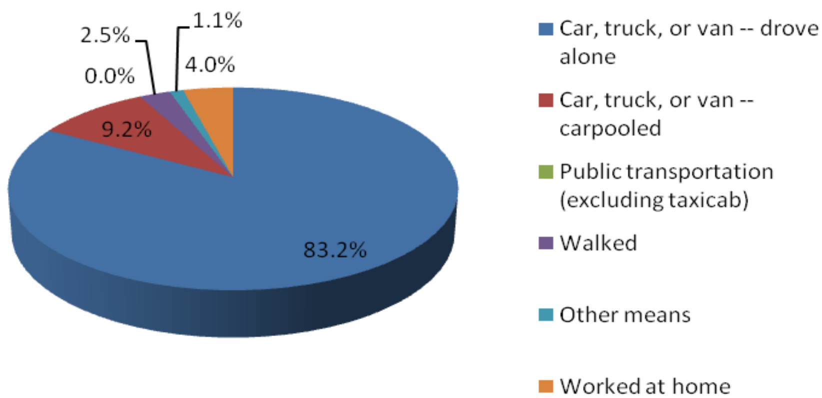
Company Name	City/Town	Year Established	# of Employees	Type of Business
Manufacturing				
GSI Grain Systems	Assumption	1972		Agricultural Manufacturing
Ahlstrom Engineer Filtration	Taylorville			Filter Manufacturing
Watson Foods	Taylorville			Food Additives
Sta-Care	Taylorville			Countertops
Botkin Lumber Company	Taylorville			Custom Crates
PBI	Taylorville			Concrete Manufacturing
Illini Metals	Taylorville			Metal Fabrication
Macon Metal Products	Taylorville			Metal Fabrication
Health Care				
Pana Community Hospital	Pana	1914	165	Healthcare
Taylorville Memorial Hospital	Taylorville		320	Healthcare
Other				
Meadow Brook Meat Company	Taylorville			Food Distribution
Waste Management	Christian County			Waste Management
Archer Daniels Midland	Taylorville			Grain Processing
Consolidated Communications	Taylorville			Service Center
Marketing Alternatives, Inc	Taylorville			Service Center
Monsanto	Taylorville			Research and Production
Service Advantage	Taylorville			Service Center
Dominion Kincaid Generation	Kincaid			Power Generation
Buckley Growers	Taylorville			Greenhouse and Nursery

Source: Christian County Planning Team

Commuter Patterns

According to American FactFinder information from 2000, approximately 15,796 of Christian County's population are in the work force. The average travel time from home to work is 25.5 minutes. Figure 3-2 depicts the commuting patterns for Christian County's labor force.

Figure 3-2: Commuter Patterns for Christian County



3.6 Land Use and Development Trends

Agriculture is the predominant land use in Christian County with over 80% of land devoted to growing crops (Figure 3-3). Other significant land uses include manufacturing, residential, and tourism. Christian County is also home to several parks including Pheasant Run Access Area and Sangchris Lake State Park.

The City of Taylorville updated its Comprehensive Plan in 2006. This plan identifies future land use and zoning districts in and adjacent to the city of Taylorville. Twelve areas of new development where identified. The most significant areas of proposed new development include the following: the Northern Industrial Zone which includes a new power plant and coal mines, Northwest Commercial zone along State Route 29; the Airport Industrial Area; Southeast Commercial Zone; and the Lake Zoning which calls for single family residential in areas adjacent to the City owned property around the lake (Figure 3-4). The Comprehensive also mentions the development of four new Enterprise Zones in Christian County in order to meet future needs of current business and to attract new business into Christian County. Figure 3-5 shows the new and existing enterprise zones for Christian County.

Figure 3-3: Land Cover of Christian County

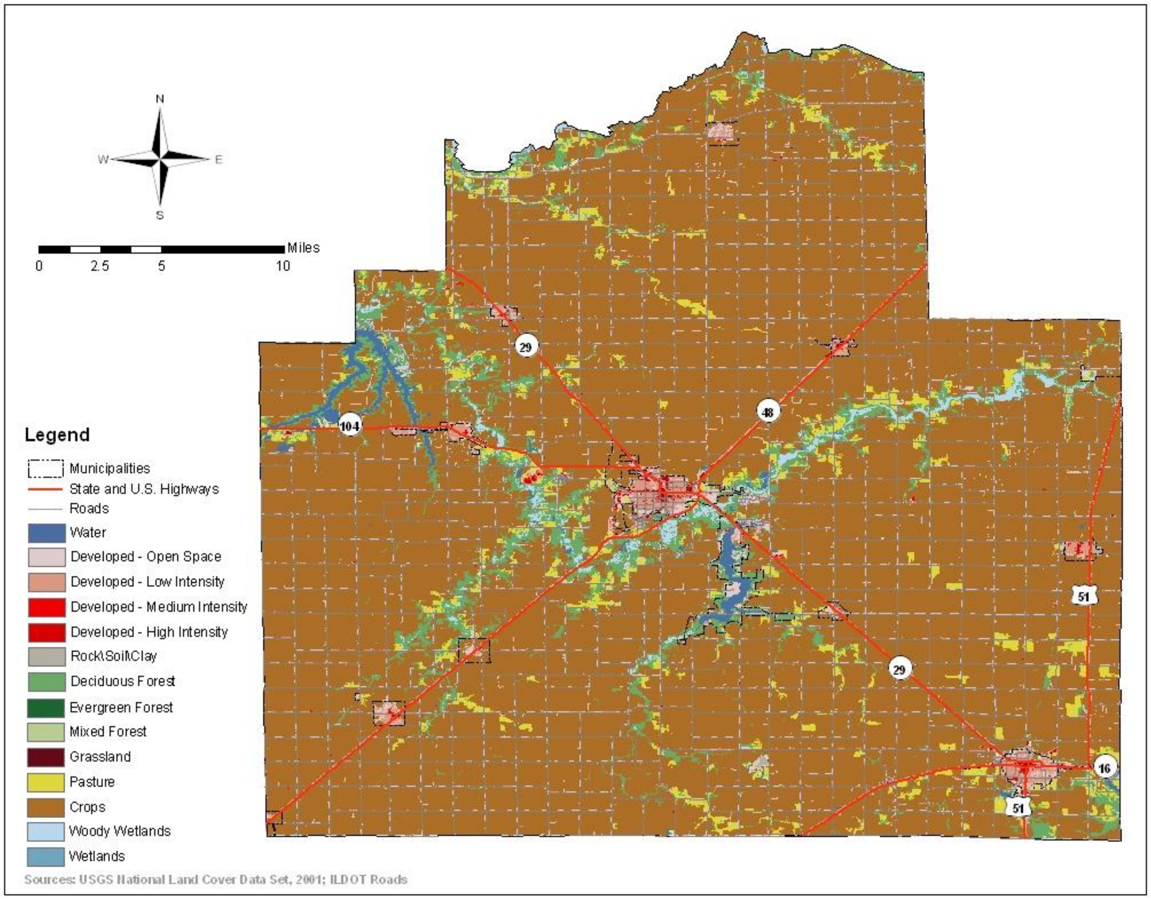


Figure 3-4: Future land use map of Taylorville and adjacent Areas

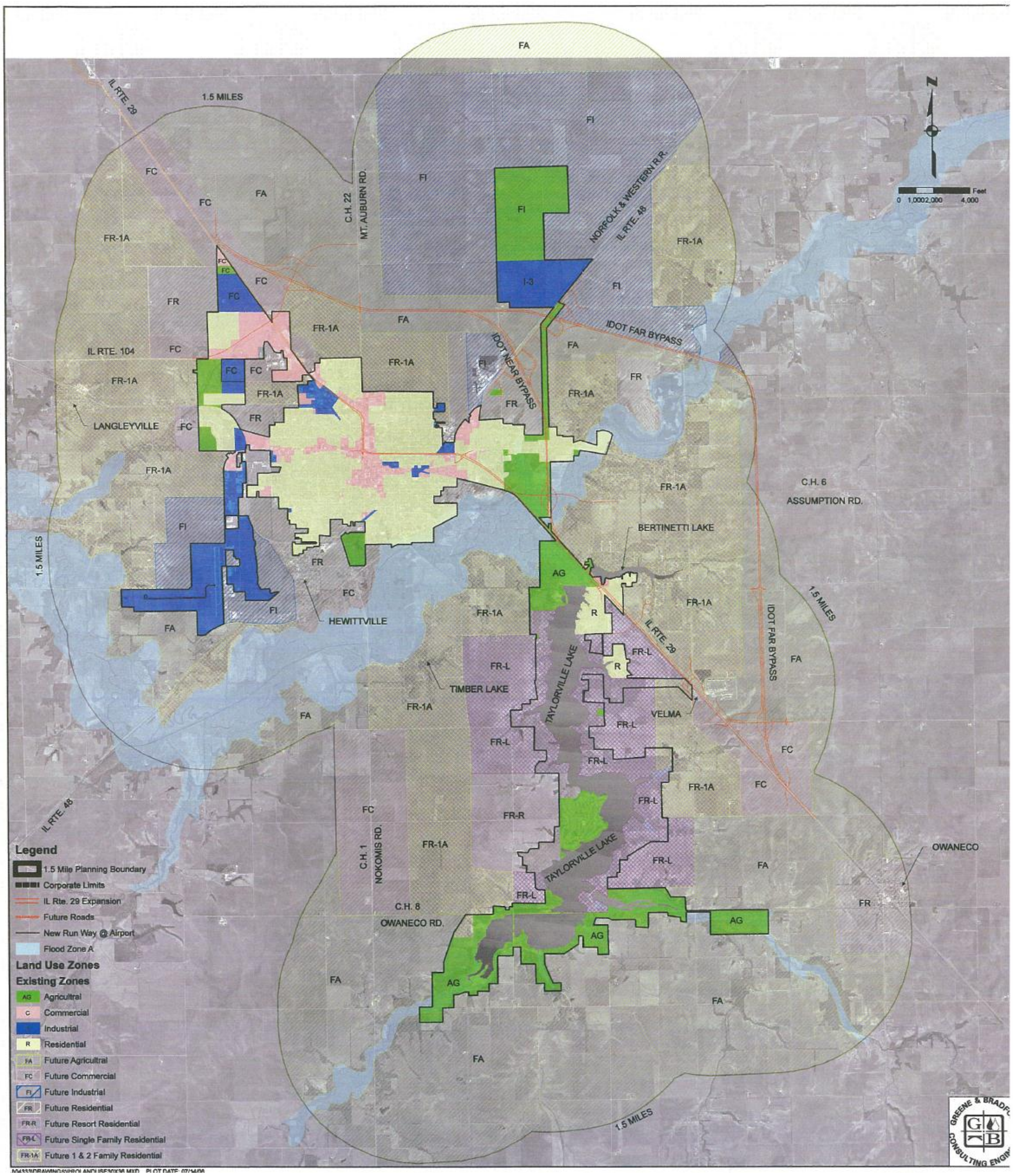
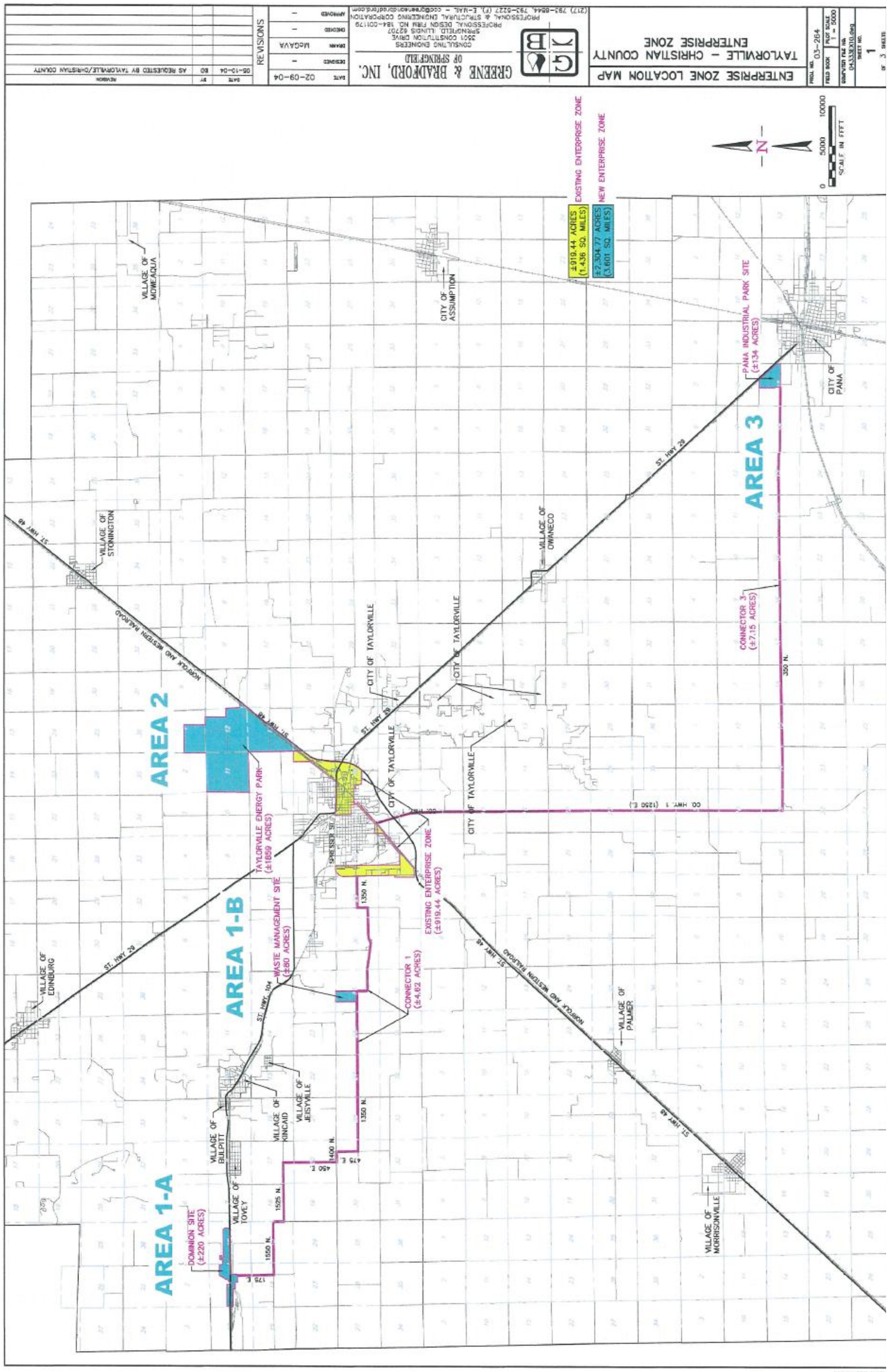
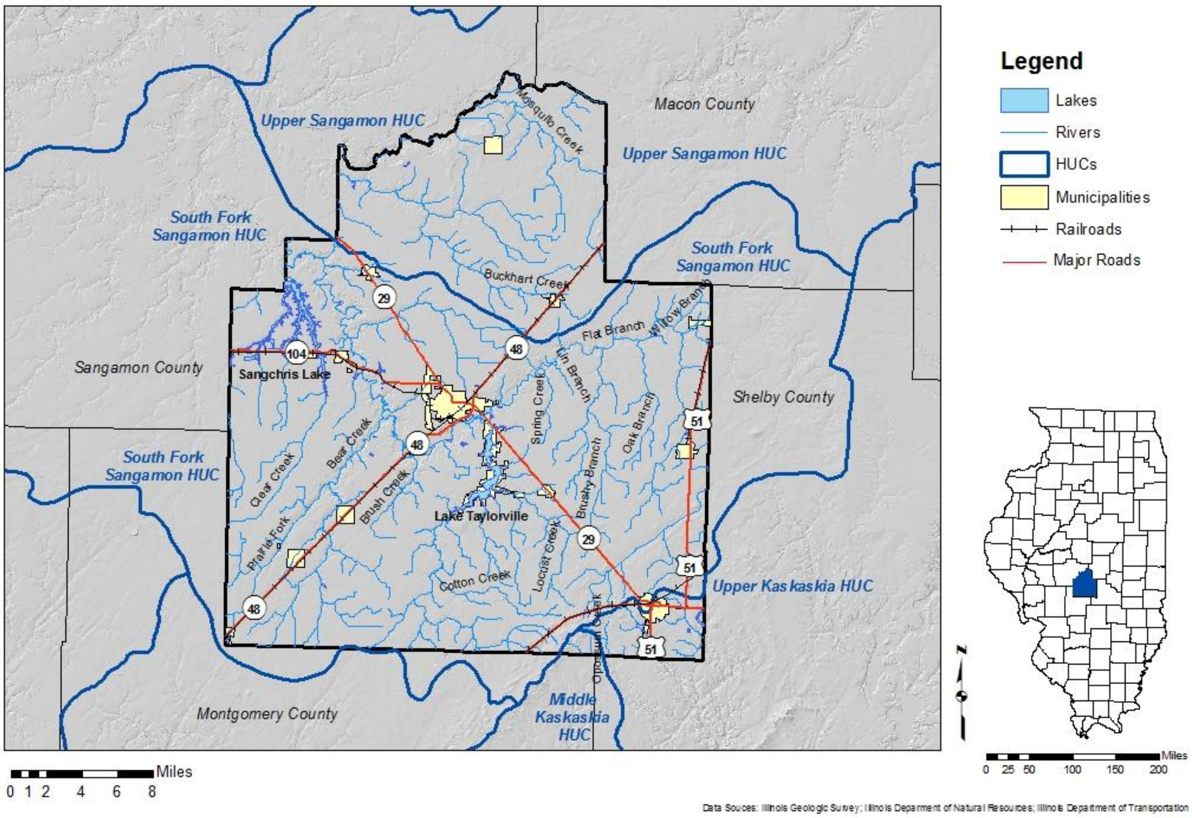


Figure 3-5: Locations for existing and future enterprise zones in Christian County



3.7 Major Lakes, Rivers, and Watersheds

Christian County has a number of bodies of water including Lake Taylorville, Sangchris Lake, Boyd Lake, Bertinetti Lake, Lake Kincaid, Lake Pana, Lake Waddy, Myers Lake, and Paragon Lake. It is also bounded by the Illinois River to the north. According to the USGS, Christian County consists of four drainage basins: the South Fork Sangamon (HUC 7130007), the Upper Kaskaskia (HUC 7140201), the Upper Sangamon (HUC 7130006 and a small portion of the Middle Kaskaskia (HUC 7140202).



Section 4 - Risk Assessment

The goal of mitigation is to reduce the future impacts of a hazard including loss of life, property damage, disruption to local and regional economies, and the expenditure of public and private funds for recovery. Sound mitigation must be based on sound risk assessment. A risk assessment involves quantifying the potential loss resulting from a disaster by assessing the vulnerability of buildings, infrastructure, and people. This assessment identifies the characteristics and potential consequences of a disaster, how much of the community could be affected by a disaster, and the impact on community assets. A risk assessment consists of three components—hazard identification, vulnerability analysis, and risk analysis.

4.1 Hazard Identification/Profile

4.1.1 Existing Plans

The plans identified in Table 1-3 did not contain a risk analysis. These local planning documents were reviewed to identify historical hazards and help identify risk. To facilitate the planning process, State flood data was used for the flood analysis.

4.1.2 National Hazard Records

4.1.2.1 National Climatic Data Center (NCDC) Records

To assist the planning team, historical storm event data was compiled from the National Climatic Data Center (NCDC). NCDC records are estimates of damage reported to the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to given weather events.

The NCDC data included 268 reported events in Christian County between November 1, 1955 and the October 31, 2009 (the most updated information as of the date of this plan). A summary table of events related to each hazard type is included in the hazard profile sections that follow. Pictures of some of the winter storm events are shown in Appendix D. Full details of individual hazard events can also be found in Appendix D. In addition to NCDC data, Storm Prediction Center (SPC) data associated with tornadoes, strong winds, and hail were plotted using SPC recorded latitude and longitude. These events are plotted and included as Appendix E. The list of NCDC hazards is included in Table 4-1.

Table 4-1: Climatic Data Center Historical Hazards

Hazard
Tornadoes
Severe Thunderstorms
Drought/Extreme Heat
Winter Storms
Flood/Flash flood

4.1.2.2 FEMA Disaster Information

Since 1965 there have been 55 Federal Disaster Declarations for the state of Illinois. Emergency declarations allow states access to FEMA funds for Public Assistance (PA); disaster declarations allow for even more PA funding including Individual Assistance (IA) and the Hazard Mitigation Grant Program (HMGP). Christian County has received federal aid for both PA and IA funding for three declared disasters since 1965. Figure 4-1 depicts the disasters and emergencies that have been declared for Christian County since 1965. Table 4-2 lists more specific information for each declaration.

Figure 4-1: FEMA-Declared Emergencies and Disasters in Christian County (1965-present)

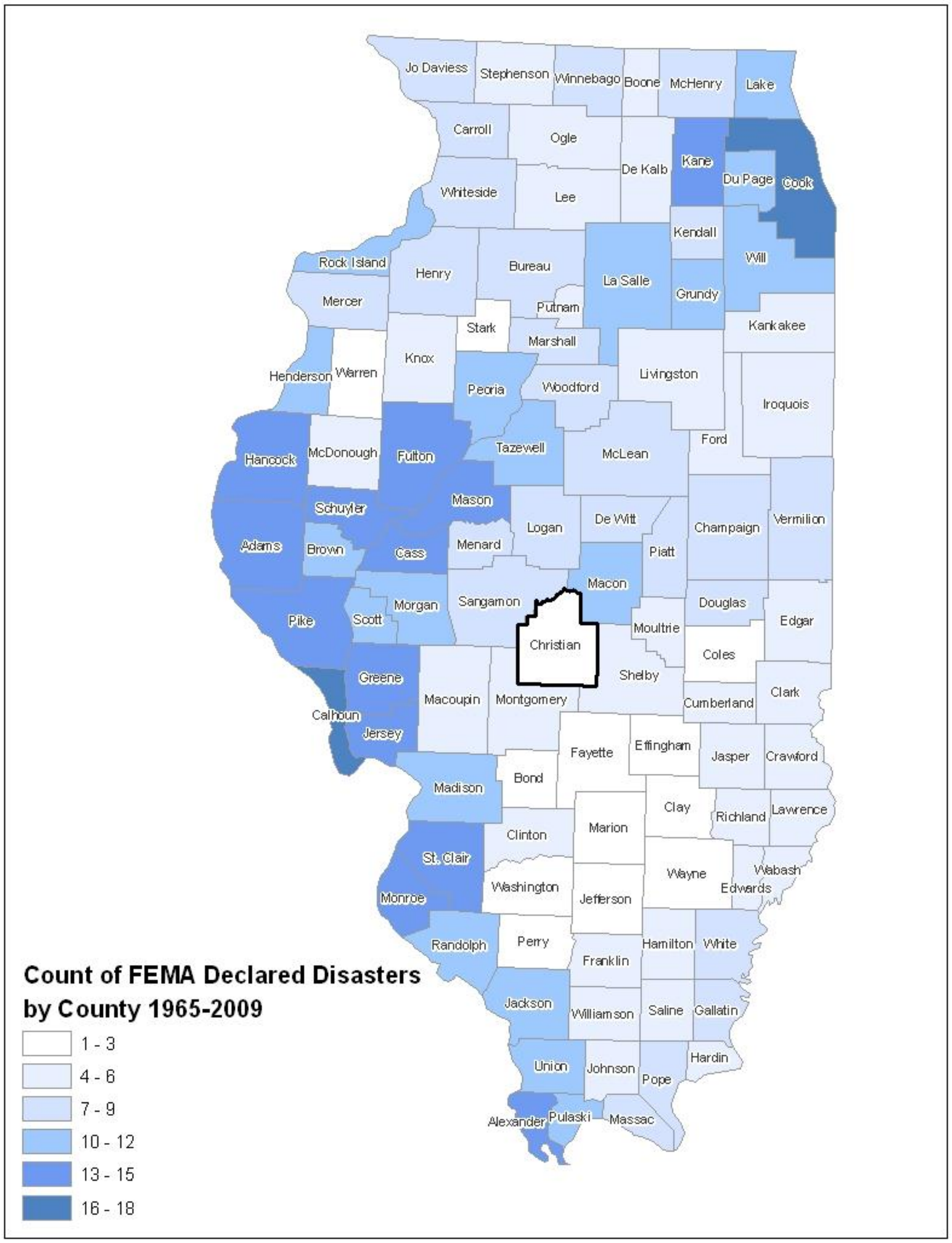


Table 4-2: FEMA-Declared Emergencies in Christian County (1965-present)

Date of Incident	Date of Declaration	Disaster Description	Type of Assistance
Jan. 1-14, 1999	March 1, 1999	Snow Emergency	Public
April 21 to May 23, 2002	May 21, 2002	Severe Storms, Tornadoes, and Flooding	Individual
Nov. 30 to Dec. 1, 2006	Feb. 9, 2007	Severe Winter Storm	Public

4.1.3 Hazard Ranking Methodology

Based on planning team input, national datasets, and existing plans, Table 4-3 lists the hazards Christian County will address in this multi-hazard mitigation plan. In addition, these hazards ranked the highest based on the Risk Priority Index discussed in section 4.1.4.

Table 4-3: Planning Team Hazard List

Hazard
Flooding
Tornado
Earthquakes
Dam or Levee Failure
Thunderstorms/ High Winds/Hail/ Lightning
Winter Storms
Transportation Hazardous Material Release

4.1.4 Calculating the Risk Priority Index

The first step in determining the Risk Priority Index (RPI) was to have the planning team members generate a list of hazards which have befallen or could potentially befall their community. Next, the planning team members were asked to assign a likelihood rating based on the criteria and methods described in the following table. Table 4-4 displays the probability of the future occurrence ranking. This ranking was based upon previous history and the definition of hazard. Using the definitions given, the likelihood of future events is "Quantified" which results in the classification within one of the four "Ranges" of likelihood.

Table 4-4: Future Occurrence Ranking

Probability	Characteristics
4 - *Highly Likely*	Event is probable within the calendar year. Event has up to 1 in 1 year chance of occurring. (1/1=100%) History of events is greater than 33% likely per year.
3 - *Likely*	Event is probable within the next three years. Event has up to 1 in 3 years chance of occurring. (1/3=33%) History of events is greater than 20% but less than or equal to 33% likely per year.
2 - *Possible*	Event is probable within the next five years. Event has up to 1 in 5 years chance of occurring. (1/5=20%) History of events is greater than 10% but less than or equal to 20% likely per year.
1 - *Unlikely*	Event is possible within the next ten years. Event has up to 1 in 10 years chance of occurring. (1/10=10%) History of events is less than or equal to 10% likely per year.

Next, planning team members were asked to consider the potential magnitude/severity of the hazard according to the severity associated with past events of the hazard. Table 4-5 gives four classifications of magnitude/severity.

Table 4-5: Hazard Magnitude

Magnitude/Severity	Characteristics
8 - *Catastrophic*	Multiple deaths. Complete shutdown of facilities for 30 or more days. More than 50% of property is severely damaged.
4 - *Critical*	Injuries and/or illnesses result in permanent disability. Complete shutdown of critical facilities for at least 14 days. More than 25% of property is severely damaged.
2 - *Limited*	Injuries and/or illnesses do not result in permanent disability. Complete shutdown of critical facilities for more than seven days. More than 10% of property is severely damaged.
1 - *Negligible*	Injuries and/or illnesses are treatable with first aid. Minor quality of life lost. Shutdown of critical facilities and services for 24 hours or less. Less than 10% of property is severely damaged.

Finally, the RPI was calculated by multiplying the probability by the magnitude/severity of the hazard. Using these values, the planning team member where then asked to rank the hazards. Table 4-6 identifies the RPI and ranking for each hazard facing Christian County.

Table 4-6: Christian County Hazards (RPI)

Hazard	Probability	Magnitude/Severity	Risk Priority Index	Rank
Winter Storm	3 - Likely	4 - Critical	12	1
Thunderstorm/High Winds/Hail/Lightning	4 - Highly Likely	2 - Limited	8	2
Tornado	3 - Likely	2 - Limited	6	3
Extreme Heat/Drought	2 - Possible	2 - Limited	4	4
Earthquake	1 - Unlikely	4 - Critical	4	5
Transportation Hazardous Materials Release	3 - Likely	1 - Negligible	3	6
Fire/Explosion	3 - Likely	1 - Negligible	3	7
Flooding	2 - Possible	1 - Negligible	2	8
Subsidence	2 - Possible	1 - Negligible	2	9
Dam/Levee Failure	1 - Unlikely	1 - Negligible	1	10

4.1.5 Jurisdictional Hazard Ranking

Because the jurisdictions in Christian County differ in their susceptibilities to certain hazards—for example, a portion of Taylorville located on the South Fork Floodplain is more likely to experience significant flooding than the village of Pana which is located on the uplands outside of any large stream's or river's floodplain which could potentially cause significant flooding—the hazards identified by the planning team were ranked by SIUC for each individual jurisdiction using the methodology outlined in Section 4.1.4. The SIUC rankings were based on input from the planning team members, available historical data, and the hazard modeling results described within this hazard mitigation plan. During the five-year review of the plan this table will be updated by the planning team to ensure these jurisdictional rankings accurately reflect each community's assessment of these hazards. Table 4-7 lists the jurisdictions and their respective hazard rankings (Ranking 1 being the highest concern).

Table 4-7: Hazard Rankings by Jurisdiction

Jurisdiction	Hazard									
	Tornado	HAZMAT	Earthquake	Thunderstorms	Flooding	Winter Storms	Subsidence	Dam/Levee Failure	Fire/ Explosion	Extreme Heat/Drought
City of Taylorville	2	6	4	3	8	1	9	10	7	5
City of Pana	3	6	5	2	8	1	9	10	7	4
*Village of Assumption	3	6	5	2	8	1	9	10	7	4
*Village of Edinburg	3	6	5	2	8	1	9	10	7	4
Village of Kincaid	3	6	5	2	8	1	9	10	7	4
*Village of Morrisonville	3	6	5	2	8	1	9	10	7	4
*Village of Mount Auburn	3	6	5	2	8	1	9	10	7	4
Village of Owaneco	1	6	4	2	5	3	N/A	N/A	N/A	N/A
Village of Palmer	3	6	5	2	8	1	9	10	7	4
Village of Stonington	3	4	6	2	8	1	9	N/A	7	5
Village of Tovey	3	6	5	2	8	1	9	10	7	4

N/A = Not applicable *Hazards for this jurisdiction were ranked by SIUC

4.1.6 GIS and HAZUS-MH

The third step in this assessment is the risk analysis, which quantifies the risk to the population, infrastructure, and economy of the community. Where possible, the hazards were quantified using GIS analyses and HAZUS-MH. This process reflects a Level 2 approach to analyzing hazards as defined for HAZUS-MH. The approach includes substitution of selected default data with local data. This process improved the accuracy of the model predictions.

HAZUS-MH generates a combination of site-specific and aggregated loss estimates depending upon the analysis options that are selected and the input that is provided by the user. Aggregate inventory loss estimates, which include building stock analysis, are based upon the assumption that building stock is evenly distributed across census blocks/tracts. Therefore, it is possible that overestimates of damage will occur in some areas while underestimates will occur in other areas.

With this in mind, total losses tend to be more reliable over larger geographic areas than for individual census blocks/tracts. It is important to note that HAZUS-MH is not intended to be a substitute for detailed engineering studies. Rather, it is intended to serve as a planning aid for communities interested in assessing their risk to flood-, earthquake-, and hurricane-related hazards. This documentation does not provide full details on the processes and procedures completed in the development of this project. It is only intended to highlight the major steps that were followed during the project.

Site-specific analysis is based upon loss estimations for individual structures. For flooding, analysis of site-specific structures takes into account the depth of water in relation to the structure. HAZUS-MH also takes into account the actual dollar exposure to the structure for the costs of building reconstruction, content, and inventory. However, damages are based upon the assumption that each structure will fall into a structural class, and structures in each class will respond in a similar fashion to a specific depth of flooding or ground shaking. Site-specific analysis is also based upon a point location rather than a polygon, therefore the model does not account for the percentage of a building that is inundated. These assumptions suggest that the loss estimates for site-specific structures as well as for aggregate structural losses need to be viewed as approximations of losses that are subject to considerable variability rather than as exact engineering estimates of losses to individual structures.

The following events were analyzed. The parameters for these scenarios were created through GIS, HAZUS-MH, and historical information to predict which communities would be at risk.

Using HAZUS-MH

1. 100-year overbank flooding
2. Earthquake scenarios

Using GIS

1. Tornado
2. Hazardous material release

4.2 Vulnerability Assessment

4.2.1 Asset Inventory

4.2.1.1 Processes and Sources for Identifying Assets

The HAZUS-MH data is based on best available national data sources. The initial step involved updating the default HAZUS-MH data using State of Illinois data sources. At Meeting #1, the planning team members were provided with a plot and report of all HAZUS-MH critical facilities. The planning team took GIS data provided by SIUC; verified the datasets using local knowledge, and allowed SIUC to use their local GIS data for additional verification. SIUC GIS analysts made these updates and corrections to the HAZUS-MH data tables prior to performing the risk assessment. These changes to the HAZUS-MH inventory reflect a Level 2 analysis. This update process improved the accuracy of the model predictions.

The default HAZUS-MH data has been updated as follows:

- The HAZUS-MH defaults, critical facilities, and essential facilities have been updated based on the most recent available data sources. Critical and essential point facilities have been reviewed, revised, and approved by local subject matter experts at each county.
- The essential facility updates (schools, medical care facilities, fire stations, police stations, and EOCs) have been applied to the HAZUS-MH model data. HAZUS-MH reports of essential facility losses reflect updated data.

Christian County provided SIUC with parcel boundaries and county Assessor records. Records without improvements were deleted. The parcel boundaries were converted to parcel points located in the centroids of each parcel boundary. Each parcel point was linked to an Assessor record based upon matching parcel numbers. The generated building inventory points represent the approximate locations (within a parcel) of building exposure. The parcel points were aggregated by census block.

- The aggregate building inventory tables used in this analysis have not been updated. Default HAZUS-MH model data was used for the earthquake.
- For the flood analysis, user-defined facilities were updated from the building inventory information provided by Christian County.

Parcel-matching results for Christian County are listed in Table 4-8.

Table 4-8: Parcel-Matching for Christian County

Data Source	Count
Assessor Records	24,739
County-Provided Parcels	23,951
Assessor Records with Improvements	16,222
Matched Parcel Points	16,222

The following assumptions were made during the analysis:

- The building exposure for flooding, tornado, and HAZMAT is determined from the Assessor records. It is assumed that the population and the buildings are located at the centroid of the parcel.
- The building exposure for earthquake used HAZUS-MH default data.
- The algorithm used to match county-provided parcel point locations with the Assessor records is not perfect. The results in this analysis reflect matched parcel records only. The parcel-matching results for Christian County are included in Table 4-8.
- Population counts are based upon 2.5 persons per household. Only residential occupancy classes are used to determine the impact on the local population. If the event were to occur at night, it would be assumed that people are at home (not school, work, or church).
- The analysis is restricted to the county boundaries. Events that occur near the county boundaries do not contain damage assessments from adjacent counties.

4.2.1.2 Essential Facilities List

Table 4-9 identifies the essential facilities that were added or updated for the analysis. Essential facilities are a subset of critical facilities. A map and list of all critical facilities is included as Appendix F.

Table 4-9: Essential Facilities List

Facility	Number of Facilities
Care Facilities	2
Emergency Operations Centers	2
Fire Stations	9
Police Stations	6
Schools	29

4.2.1.3 Facility Replacement Costs

Facility replacement costs and total building exposure are identified in Table 4-10. The replacement costs have not been updated by local data. Table 4-10 also includes the estimated number of buildings within each occupancy class.

Table 4-10: Building Exposure

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Agricultural	291	$46,273
Commercial	713	$308,869
Education	37	$38,425
Government	39	$23,498
Industrial	193	$87,008

General Occupancy	Estimated Total Buildings	Total Building Exposure (X 1000)
Religious/Non-Profit	95	$69,007
Residential	17,619	$1,843,701
Total	**18,987**	**$2,416,781**

4.3 Future Development

As the county's population continues to grow, the residential and urban areas will extend further into the county, placing more pressure on existing transportation and utility infrastructure while increasing the rate of farmland conversion; Christian County will address specific mitigation strategies in Section 5 to alleviate such issues.

Because Christian County is vulnerable to a variety of natural and technological threats, the county government—in partnership with state government—must make a commitment to prepare for the management of these types of events. Christian County is committed to ensuring that county elected and appointed officials become informed leaders regarding community hazards so that they are better prepared to set and direct policies for emergency management and county response.

4.4 Hazard Profiles

4.4.1 Tornado Hazard

Hazard Definition for Tornado Hazard

Tornadoes pose a great risk to Illinois and its citizens. Tornadoes can occur at any time during the day or night. They can also happen during any month of the year. The unpredictability of tornadoes makes them one of the state's most dangerous hazards. Their extreme winds are violently destructive when they touch down in the region's developed and populated areas. Current estimates place the maximum velocity at about 300 miles per hour, but higher and lower values can occur. A wind velocity of 200 miles per hour will result in a wind pressure of 102.4 pounds per square foot of surface area—a load that exceeds the tolerance limits of most buildings. Considering these factors, it is easy to understand why tornadoes can be so devastating for the communities they hit.

Tornadoes are defined as violently-rotating columns of air extending from thunderstorms to the ground. Funnel clouds are rotating columns of air not in contact with the ground; however, the violently-rotating column of air can reach the ground very quickly and become a tornado. If the funnel cloud picks up and blows debris, it has reached the ground and is a tornado.

Tornadoes are classified according to the Fujita tornado intensity scale. The tornado scale ranges from low intensity F0 with effective wind speeds of 40 to 70 miles per hour to F5 tornadoes with effective wind speeds of over 260 miles per hour. The Fujita intensity scale is described in Table 4-11.

Table 4-11: Fujita Tornado Rating

Fujita Number	Estimated Wind Speed	Path Width	Path Length	Description of Destruction
0 *Gale*	40-72 mph	6-17 yards	0.3-0.9 miles	Light damage, some damage to chimneys, branches broken, sign boards damaged, shallow-rooted trees blown over.
1 *Moderate*	73-112 mph	18-55 yards	1.0-3.1 miles	Moderate damage, roof surfaces peeled off, mobile homes pushed off foundations, attached garages damaged.
2 *Significant*	113-157 mph	56-175 yards	3.2-9.9 miles	Considerable damage, entire roofs torn from frame houses, mobile homes demolished, boxcars pushed over, large trees snapped or uprooted.
3 *Severe*	158-206 mph	176-566 yards	10-31 miles	Severe damage, walls torn from well-constructed houses, trains overturned, most trees in forests uprooted, heavy cars thrown about.
4 *Devastating*	207-260 mph	0.3-0.9 miles	32-99 miles	Complete damage, well-constructed houses leveled, structures with weak foundations blown off for some distance, large missiles generated.
5 *Incredible*	261-318 mph	1.0-3.1 miles	100-315 miles	Foundations swept clean, automobiles become missiles and thrown for 100 yards or more, steel-reinforced concrete structures badly damaged.

Source: NOAA Storm Prediction Center

Previous Occurrences for Tornado Hazard

There have been several occurrences of tornadoes within Christian County during the past few decades. The NCDC database reported 29 tornadoes/funnel clouds in Christian County since 1955. These storms have been attributed with five injuries and $1.17 million in property damage. The most recent recorded event occurred on May 13, 2009 during a chain of severe thunderstorms which produced a total of four tornadoes. The tornado touched down four miles west of Pana and tracked northeastward severely damaging a pole barn and causing roof damage to a house.

Christian County NCDC recorded tornadoes are identified in Table 4-12. Pictures of some of the historical tornado events are shown in Appendix D. Additional details of individual hazard events can also be found in Appendix D.

Table 4-12: Christian County Tornadoes*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Christian	11/15/1955	Tornado	F1	0	0	0	0
Christian	9/30/1961	Tornado	F1	0	0	25K	0
Christian	4/2/1964	Tornado	F2	0	0	25K	0
Christian	4/3/1974	Tornado	F1	0	0	250K	0
Christian	5/11/1975	Tornado	F1	0	2	3K	0
Christian	7/8/1975	Tornado	F2	0	0	0	0
Christian	2/16/1976	Tornado	F2	0	0	250K	0
Christian	3/20/1976	Tornado	F3	0	0	250K	0
Christian	8/6/1977	Tornado	F0	0	0	0	0
Christian	8/6/1977	Tornado	F1	0	0	0	0
Christian	4/13/1987	Tornado	F1	0	2	25K	0
Assumption	4/7/1998	Tornado	F0	0	0	0	0
Mt Auburn	6/14/1998	Tornado	F0	0	0	0	0
Morrisonville	6/1/1999	Tornado	F1	0	0	750K	0
Kincaid	5/10/2003	Tornado	F0	0	0	0	0
Owaneco	8/31/2003	Tornado	F1	0	0	0	0
Mt Auburn	3/12/2006	Funnel Cloud	N/A	0	0	0	0
Morrisonville	4/2/2006	Tornado	F0	0	0	0	0
Taylorville	4/2/2006	Tornado	F1	0	1	0	0
Pana	4/2/2006	Tornado	F1	0	0	0	0
Taylorville	4/2/2006	Tornado	F0	0	0	0	0
Assumption	4/2/2006	Tornado	F1	0	0	0	0
Taylorville	4/16/2006	Tornado	F0	0	0	0	0
Assumption	4/16/2006	Tornado	F0	0	0	0	0
Stonington	4/16/2006	Tornado	F0	0	0	0	0
Morrisonville	5/24/2006	Tornado	F0	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Assumption	4/25/2007	Tornado	F0	0	0	0	0
Taylorville	5/30/2008	Tornado	F0	0	0	0	0
Rosamond	5/13/2009	Tornado	F1	0	0	50K	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Tornado Hazard

The entire county has the same risk for occurrence of tornadoes. They can occur at any location within the county.

Hazard Extent for Tornado Hazard

The historical tornadoes generally moved from southwest to northeast across the county. The extent of the hazard varies both in terms of the extent of the path and the wind speed.

Risk Identification for Tornado Hazard

Based on historical information, the probability of future tornadoes in Christian County is likely. Tornadoes with varying magnitudes are expected to happen. According to the RPI, tornadoes ranked as the number three hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	2	=	**6**

Vulnerability Analysis for Tornado Hazard

Tornadoes can occur within any area in the county; therefore, the entire county population and all buildings are vulnerable to tornadoes. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Christian County are discussed in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to tornadoes. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts will vary based on the magnitude of the tornado but can include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

The building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, and loss of building function (e.g. damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a tornado the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a tornado. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

An example scenario is described as follows to gauge the anticipated impacts of tornadoes in the county, in terms of numbers and types of buildings and infrastructure.

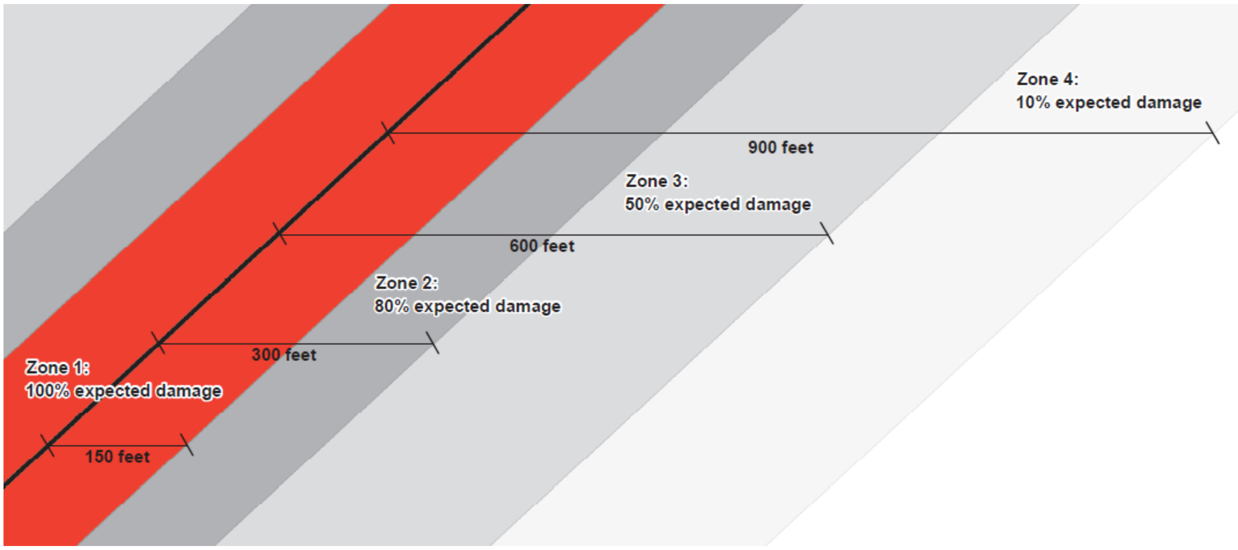
GIS overlay modeling was used to determine the potential impacts of an F4 tornado. The analysis used a hypothetical path based upon the F4 tornado event that ran for 25 miles along State Route 48 through Taylorville and Stonington. The selected widths were modeled after a recreation of the Fujita-Scale guidelines based on conceptual wind speeds, path widths, and path lengths. There is no guarantee that every tornado will fit exactly into one of these six categories. Table 4-13 depicts tornado damage curves as well as path widths.

Table 4-13: Tornado Path Widths and Damage Curves

Fujita Scale	Path Width (feet)	Maximum Expected Damage
5	2,400	100%
4	1,800	100%
3	1,200	80%
2	600	50%
1	300	10%
0	150	0%

Within any given tornado path there are degrees of damage. The most intense damage occurs within the center of the damage path with decreasing amounts of damage away from the center. After the hypothetical path is digitized on a map the process is modeled in GIS by adding buffers (damage zones) around the tornado path. Figure 4-2 and Table 4-10 describe the zone analysis. The selected hypothetical tornado path is depicted in Figure 4-3, and the damage curve buffers are shown in Figure 4-4.

Figure 4-2: F4 Tornado Analysis Using GIS Buffers



An F4 tornado has four damage zones, depicted in Table 4-14. Total devastation is estimated within 150 feet of the tornado path. The outer buffer is 900 feet from the tornado path, within which buildings will experience 10% damage.

Table 4-14: F4 Tornado Zones and Damage Curves

Zone	Buffer (feet)	Damage Curve
1	0-150	100%
2	150-300	80%
3	300-600	50%
4	600-900	10%

Figure 4-3: Hypothetical F4 Tornado Path in Christian County

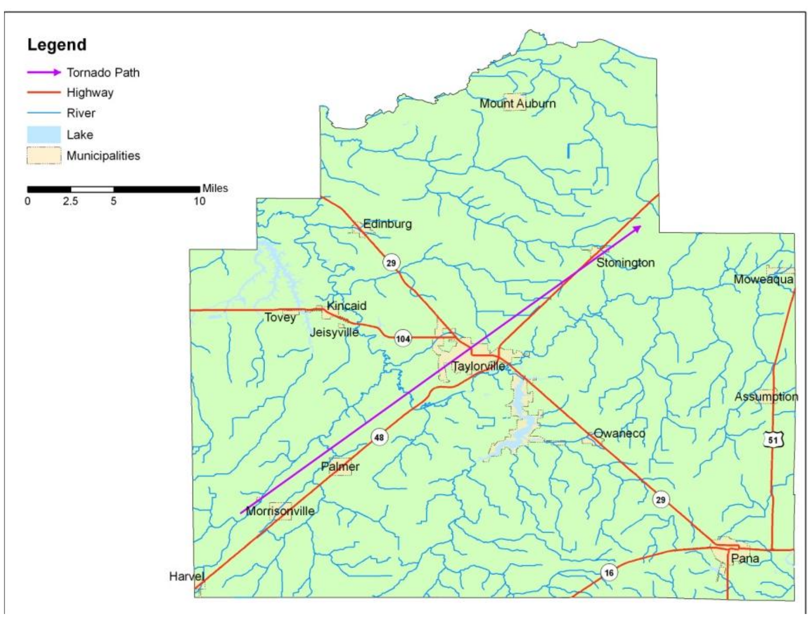
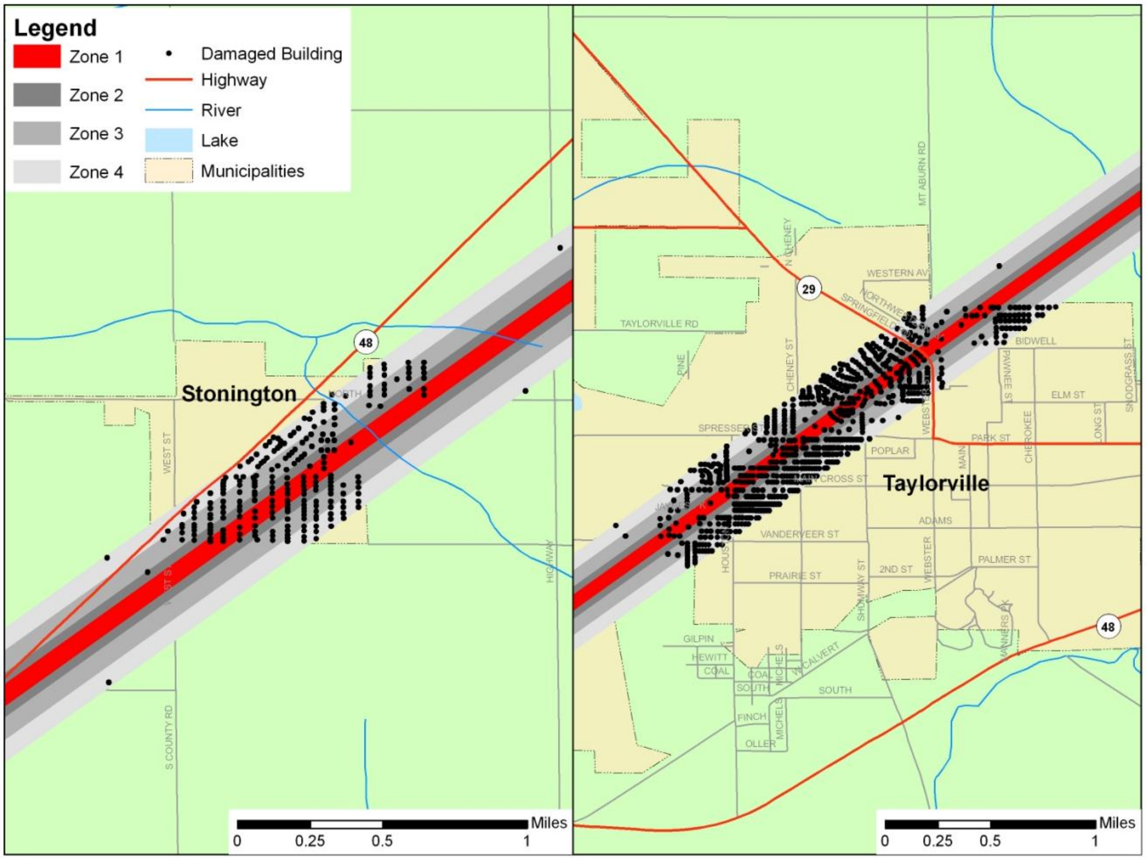


Figure 4-4: Modeled F4 Tornado Damage Buffers in Stonington and Taylorville



The results of the analysis are depicted in Tables 4-15 and 4-16. The GIS analysis estimates that 1,121 buildings will be damaged. The estimated building losses were $47.9 million. The building losses are an estimate of building replacement costs multiplied by the percentages of damage. The overlay was performed against parcels provided by Christian County that were joined with Assessor records showing property improvement.

The Assessor records often do not distinguish parcels by occupancy class if the parcels are not taxable. For purposes of analysis, the total number of buildings and the building replacement costs for government, religious/non-profit, and education should be lumped together.

Table 4-15: Estimated Numbers of Buildings Damaged by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	152	156	342	326
Commercial	7	16	28	22
Industrial	0	0	0	0
Agriculture	4	2	3	11
Religious	7	5	18	19
Government	0	0	0	0
Education	1	0	2	0
Total	**171**	**179**	**393**	**378**

Table 4-16: Estimated Building Losses by Occupancy Type

Occupancy	Zone 1	Zone 2	Zone 3	Zone 4
Residential	$11,130,693	$9,118,500	$11,737,242	$2,076,595
Commercial	$1,704,363	$4,863,432	$2,722,856	$408,179
Industrial	$0	$0	$0	$0
Agriculture	$135,333	$94,248	$123,654	$80,487
Religious	$0	$0	$0	$0
Government	$0	$0	$0	$0
Education	$2,500,000	$0	$1,250,000	$0
Total	**$15,470,389**	**$14,076,180**	**$15,833,752**	**$2,565,261**

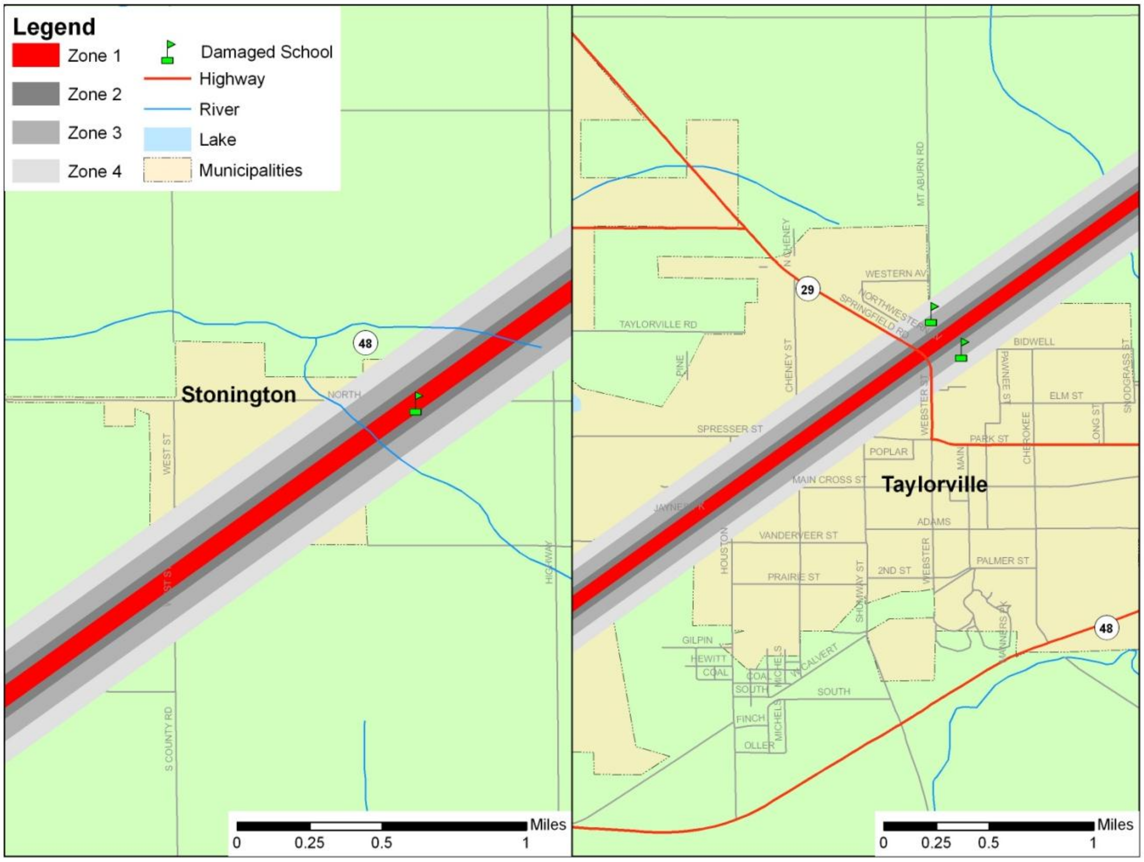
Critical Facilities Damage

There are three critical facilities located within 900 feet of the hypothetical tornado path. The affected facilities are identified in Table 4-17, and their geographic locations are shown in Figures 4-5.

Table 4-17: Estimated Essential Facilities Affected

Name
School Facilities
Vision Way Christian School
Taylorville Junior and Senior High School
Stonington Elementary School

Figure 4-5: Essential Facilities within Tornado Path in Stonington and Taylorville



Vulnerability to Future Assets/Infrastructure for Tornado Hazard

The entire population and buildings have been identified as at risk because tornadoes can occur anywhere within the state, at any time of the day, and during any month of the year. Furthermore, any future development in terms of new construction within the county will be at risk. The building exposure for Christian County is included in Table 4-10.

All critical facilities in the county and communities within the county are at risk. A map and list of all critical facilities is included as Appendix F.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warnings of approaching storms are also vital to preventing the loss of property and ensuring the safety of Christian County residents.

4.4.2 Flood Hazard

Hazard Definition for Flooding

Flooding is a significant natural hazard throughout the United States. The type, magnitude, and severity of flooding are functions of the amount and distribution of precipitation over a given area, the rate at which precipitation infiltrates the ground, the geometry and hydrology of the catchment, and flow dynamics and conditions in and along the river channel. Floods can be classified as one of two types: upstream floods or downstream floods. Both types of floods are common in Illinois.

Upstream floods, also called flash floods, occur in the upper parts of drainage basins and are generally characterized by periods of intense rainfall over a short duration. These floods arise with very little warning and often result in locally intense damage, and sometimes loss of life, due to the high energy of the flowing water. Flood waters can snap trees, topple buildings, and easily move large boulders or other structures. Six inches of rushing water can upend a person; another 18 inches might carry off a car. Generally, upstream floods cause damage over relatively localized areas, but they can be quite severe in the local areas in which they occur. Urban flooding is a type of upstream flood. Urban flooding involves the overflow of storm drain systems and can be the result of inadequate drainage combined with heavy rainfall or rapid snowmelt. Upstream or flash floods can occur at anytime of the year in Illinois, but they are most common in the spring and summer months.

Downstream floods, sometimes called riverine floods, refer to floods on large rivers at locations with large upstream catchments. Downstream floods are typically associated with precipitation events that are of relatively long duration and occur over large areas. Flooding on small tributary streams may be limited, but the contribution of increased runoff may result in a large flood downstream. The lag time between precipitation and time of the flood peak is much longer for downstream floods than for upstream floods, generally providing ample warning for people to move to safe locations and, to some extent, secure some property against damage. Riverine flooding on the large rivers of Illinois generally occurs during either the spring or summer.

Hazard Definition for Dam and Levee Failure

Dams are structures that retain or detain water behind a large barrier. When full or partially full, the difference in elevation between the water above the dam and below creates large amounts of potential energy, creating the potential for failure. The same potential exists for levees when they serve their purpose, which is to confine flood waters within the channel area of a river and exclude that water from land or communities land-ward of the levee. Dams and levees can fail due to either 1) water heights or flows above the capacity for which the structure was designed; or 2) deficiencies in the structure such that it cannot hold back the potential energy of the water. If a dam or levee fails, issues of primary concern include loss of human life/injury, downstream property damage, lifeline disruption (of concern would be transportation routes and utility lines required to maintain or protect life), and environmental damage.

Many communities view both dams and levees as permanent and infinitely safe structures. This sense of security may well be false, leading to significantly increased risks. Both downstream of dams and on floodplains protected by levees, security leads to new construction, added infrastructure, and increased population over time. Levees in particular are built to hold back flood waters only up to some maximum level, often the 100-year (1% annual probability) flood event. When that maximum is exceeded by more than the design safety margin, the levee will be overtopped or otherwise fail, inundating communities in the land previously protected by that levee. It has been suggested that climate change, land-use shifts, and some forms of river engineering may be increasing the magnitude of large floods and the frequency of levee failure situations.

In addition to failure that results from extreme floods above the design capacity, levees and dams can fail due to structural deficiencies. Both dams and levees require constant monitoring and regular maintenance to assure their integrity. Many structures across the U.S. have been under-funded or otherwise neglected, leading to an eventual day of reckoning in the form either of realization that the structure is unsafe or, sometimes, an actual failure. The threat of dam or levee failure may require substantial commitment of time, personnel, and resources. Since dams and levees deteriorate with age, minor issues become larger compounding problems, and the risk of failure increases.

Previous Occurrences for Flooding

The NCDC database reported 23 flood events in Christian County since 1994. The most recent significant flood event occurred during May, 2002, when runoff from heavy rains caused flooding problems in numerous counties. Two mudslides occurred at the Oak Hill Cemetery in Taylorville, IL, covering the nearby road in mud. Several other roads in Christian County were washed out by the flooding, and one man was injured near Jacksonville, IL, when a car was swept downstream.

Christian County NCDC recorded floods are identified in Table 4-18. Pictures of some of the historical flooding events are shown in Appendix D. Additional details of individual hazard events can also be found in Appendix D.

Table 4-18: Christian County Previous Occurrences of Flooding*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Central Il	4/12/1994	Flooding	N/A	0	0	50.0M	0
Countywide	10/5/2000	Flash Flood	N/A	0	0	0	0
Kincaid	4/10/2001	Flash Flood	N/A	0	0	0	0
Countywide	6/6/2001	Flash Flood	N/A	0	0	0	0
North Portion	4/19/2002	Flash Flood	N/A	0	0	0	0
Taylorville	4/21/2002	Flash Flood	N/A	0	0	0	0
Morrisonville	5/1/2002	Flash Flood	N/A	0	0	0	0
Morrisonville	5/6/2002	Flash Flood	N/A	0	0	0	0
ILZ052 - 068	5/6/2002	Flood	N/A	0	0	0	0
Countywide	5/7/2002	Flash Flood	N/A	0	0	0	0
Countywide	5/12/2002	Flash Flood	N/A	0	0	0	0
Countywide	5/12/2002	Flood	N/A	0	1	0	0
South Portion	5/27/2002	Flash Flood	N/A	0	0	0	0
North Portion	6/11/2002	Flash Flood	N/A	0	0	0	0

Countywide	6/13/2002	Flash Flood	N/A	0	0	0	0
Countywide	8/2/2003	Flash Flood	N/A	0	0	0	0
Morrisonville	5/13/2004	Flash Flood	N/A	0	0	0	0
Morrisonville	5/23/2004	Flash Flood	N/A	0	0	0	0
Countywide	1/13/2005	Flash Flood	N/A	0	0	0	0
Northeast Portion	5/11/2005	Flash Flood	N/A	0	0	0	0
Taylorville	5/30/2008	Flash Flood	N/A	0	0	0K	0K
Roby	5/13/2009	Flash Flood	N/A	0	0	0K	0K
Sicily	5/15/2009	Flash Flood	N/A	0	0	0K	0K

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Previous Occurrences for Dam and Levee Failure

According to the Christian County planning team, there are no records or local knowledge of any dam or certified levee failure in the county.

Repetitive Loss Properties

FEMA defines a repetitive loss structure as a structure covered by a contract of flood insurance issued under the NFIP, which has suffered flood loss damage on two occasions during a 10-year period that ends on the date of the second loss, in which the cost to repair the flood damage is 25% of the market value of the structure at the time of each flood loss.

The Illinois Emergency Management Agency (IEMA) was contacted to determine the location of repetitive loss structures. Table 4-19 lists 2009 data for damages to these repetitive loss structures.

Table 4-19: Christian County Repetitive Loss Structures

Jurisdiction	Occupancy Type	Number of Structures	Number of Losses
Christian County	Single Family	1	3
Village of Stonington	Single Family	1	2

Geographic Location for Flooding

Most river flooding occurs in early spring and is the result of excessive rainfall and/or the combination of rainfall and snowmelt. Severe thunderstorms may cause flooding during the summer or fall, but tend to be localized. The primary source of river flooding in Christian County is the Sangamon River and the South Fork.

Flash floods, brief heavy flows in small streams or normally dry creek beds, also occur within the county. Flash flooding is typically characterized by high-velocity water, often carrying large amounts of debris. Urban flooding involves the overflow of storm drain systems and is typically the result of inadequate drainage following heavy rainfall or rapid snowmelt.

A digital file of the FIRM maps was used to identify specific stream reaches for analysis. The areas of riverine flooding are depicted on the map in Appendix E.

The National Oceanic and Atmospheric Administration (NOAA) Advanced Hydrologic Prediction Service provides information from gauge locations at points along various rivers across the United States. For Christian County, no data is provided.

Geographic Location for Dam and Levee Failure

HAZUS-MH identified 13 dams in Christian County. Of these 13 dams, there is one high hazard dam, five significant hazard dams, and seven low hazard dams. Three of these dams have emergency action plan (EAP). The maps in Appendix F illustrate the locations of Christian County dams. Table 4-20 summarizes the dam information.

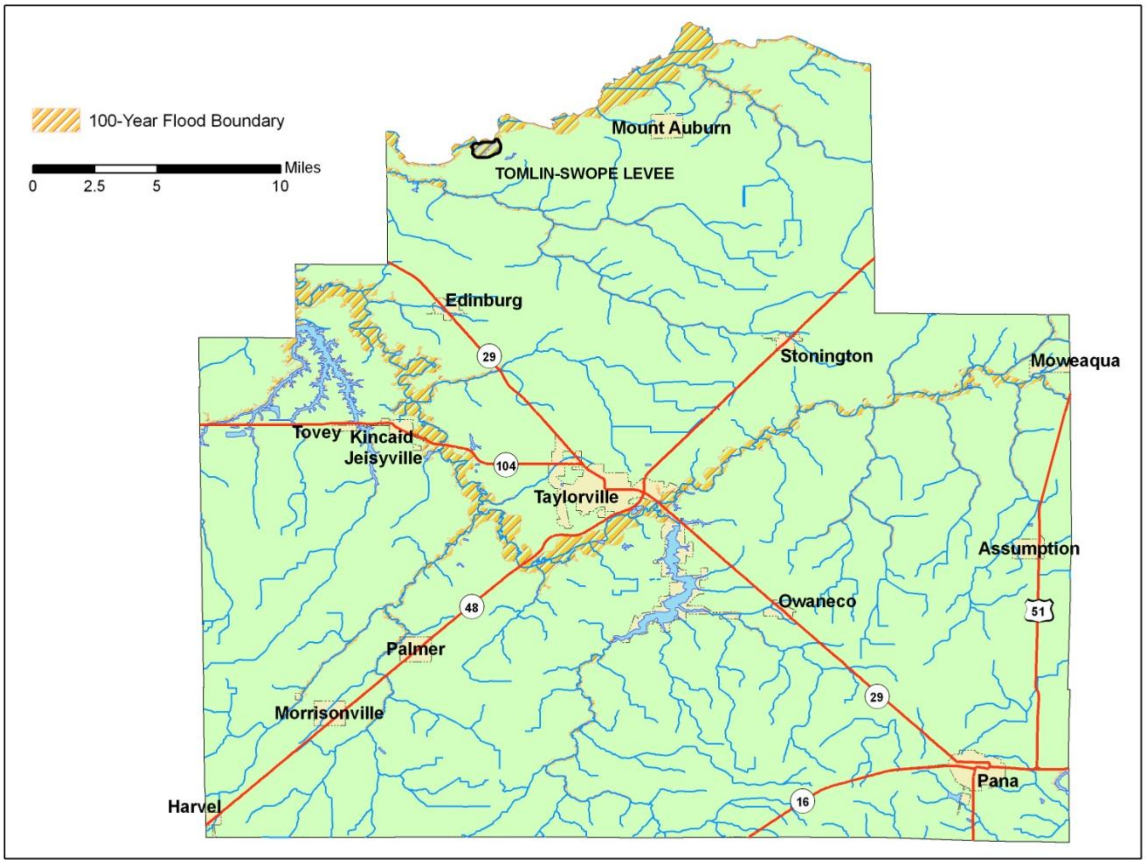
Table 4-20: National Inventory of Dams

Dam Name	River	Hazard	EAP
Kincaid City Lake Dam	Tributary South Fork of Sangamon River	S	Y
Bertinettis Lake Dam	Tributary South Fork of Sangamon River	S	N
Lake Taylorville Dam	South Fork of Sangamon River	H	Y
Paragon Lake Dam	Coal Creek	L	N
Boyd Lake Dam	Tributary to Bear Creek	S	N
Lusters Lake Dam	Tributary to Brush Creek	L	N
Pawnee Capital Group Slurry Pond 2 Dam	Tributary to Sangchris Lake	S	Y
Peabody/Slurry Impoundment 1 Dam	Clear Creek off Stream	S	N
Pawnee Capital Group Slurry Pond 3 Dam	Tributary to Sangchris Lake	L	N
Locust Creek Detention Basin Dam	Locust Creek	L	N
Mine No. 10		L	N
Thomas Pond Dam #1	South Tributary Sangamon River	B	N
Ostermier Pond Dam #1	East Tributary to South Fork on Sangamon River	L	NR

* The dams listed in this multi-hazard mitigation plan are recorded from default HAZUS-MH data. Their physical presences were not confirmed; therefore, new or unrecorded structures may exist. A more complete list of locations and attributes is included in Appendix F. L= Low Hazard Dam, S = Significant Hazard Dam, Y = Yes, N = No, NR = not required.

A review of the United States Army Corps of Engineers and local records revealed one levee, Tomlin-Swope Levee, within Christian County along the Sangamon River. This levee is considered an agricultural levee which has a flood protection level of approximately the 10-year flood event and is not intended to protect lives or non-agricultural property. Figure 4-6 shows the approximate location of the levee.

Figure 4-6: Location of Levees within Christian County



Hazard Extent for Flooding

The HAZUS-MH flood model is designed to generate a flood depth grid and flood boundary polygon by deriving hydrologic and hydraulic information based on user-provided elevation data or by incorporating selected output from other flood models. HAZUS-MH also has the ability to clip a Digital Elevation Model (DEM) with a user-provided flood boundary, thus creating a flood depth grid. For Christian County, HAZUS-MH was used to extract flood depth by clipping the DEM with the IDNR FIRMs Base Flood Elevation (BFE) boundary. The BFE is defined as the area that has a 1% chance of flooding in any given year.

Flood hazard scenarios were modeled using GIS analysis and HAZUS-MH. The flood hazard modeling was based on historical occurrences and current threats. Existing flood maps were used to identify the areas of study. These digital files, although not official FIRMs, provided the boundary which was the basis for this analysis. Planning team input and a review of historical information provided additional information on specific flood events.

Hazard Extent for Dam and Levee Failure

When dams are assigned the low (L) hazard potential classification, it means that failure or incorrect operation of the dam will result in no human life losses and no economic or environmental losses. Losses are principally limited to the owner’s property. Dams assigned the significant (S) hazard classification are those dams in which failure or incorrect operation results in no probable loss of human life; however it can cause economic loss, environment damage, and disruption of lifeline facilities. Dams classified as significant hazard potential dams are often located in predominantly rural or agricultural areas, but could be located in populated areas with a significant amount of infrastructure. Dams assigned the high (H) hazard potential classification are those dams in which failure or incorrect operation has the highest risk to cause loss of human life and significant damage to buildings and infrastructure.

According to default HAZUS-MH data, one dam is classified as high hazard and three dams have Emergency Action Plans (EAP). An EAP is not required by the State of Illinois but is strongly recommended by the Illinois Department of Natural Resources.

Accurate mapping of the risks of flooding behind levees depends on knowing the condition and level of protection the levees actually provide. FEMA and the U.S. Army Corps of Engineers are working together to make sure that flood hazard maps clearly reflect the flood protection capabilities of levees, and that the maps accurately represent the flood risks posed to areas situated behind them. Levee owners—usually states, communities, or in some cases private individuals or organizations—are responsible for ensuring that the levees they own are maintained according to their design. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the one-percent-annual chance flood.

Risk Identification for Flood Hazard

Based on historical information and the HAZUS-MH flooding analysis results, future occurrence of flooding in Christian County is possible. According to the Risk Priority Index (RPI), flooding is ranked as the number eight hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	1	=	2

Risk Identification for Dam/Levee Failure

Based on operation and maintenance requirements and local knowledge of the dams in Christian County, the occurrence of a dam or levee failure is unlikely. However, if a high hazard dam were to fail, the magnitude and severity of the damage could be great. The warning time and duration of the dam failure event would be very short. According to the RPI, dam and levee failure ranked as the number ten hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
1	x	**1**	=	**1**

HAZUS-MH Analysis Using 100-Year Flood Boundary and County Parcels

HAZUS-MH generated the flood depth grid for a 100-year return period by clipping the 1/3 Arc-Second (approximately 10 meters) Digital Elevation Model (DEM) to the Christian County flood boundary. Next, HAZUS-MH utilized a user-defined analysis of Christian County with site-specific parcel data provided by the county.

HAZUS-MH estimates the 100-year flood would damage 304 buildings with an estimated building related loss of $17.5 million. The total estimated numbers of damaged buildings are given in Table 4-21. Figure 4-7 depicts the Christian County parcel points that fall within the 100-year floodplain. Figure 4-8 highlights damaged buildings within the floodplain areas in Taylorville and Kinkaid.

Table 4-21: Christian County HAZUS-MH Building Damage

General Occupancy	Number of Buildings Damaged	Total Building Damage
Residential	175	$6,436,326
Commercial	8	$571,639
Industrial	0	$0
Agricultural	89	$10,485,476
Religious	32	$28,392
Government	0	$0
Education	0	$0
Total	**304**	**$17,521,832**

Figure 4-7: Christian County Buildings in Floodplain (100-Year Flood)

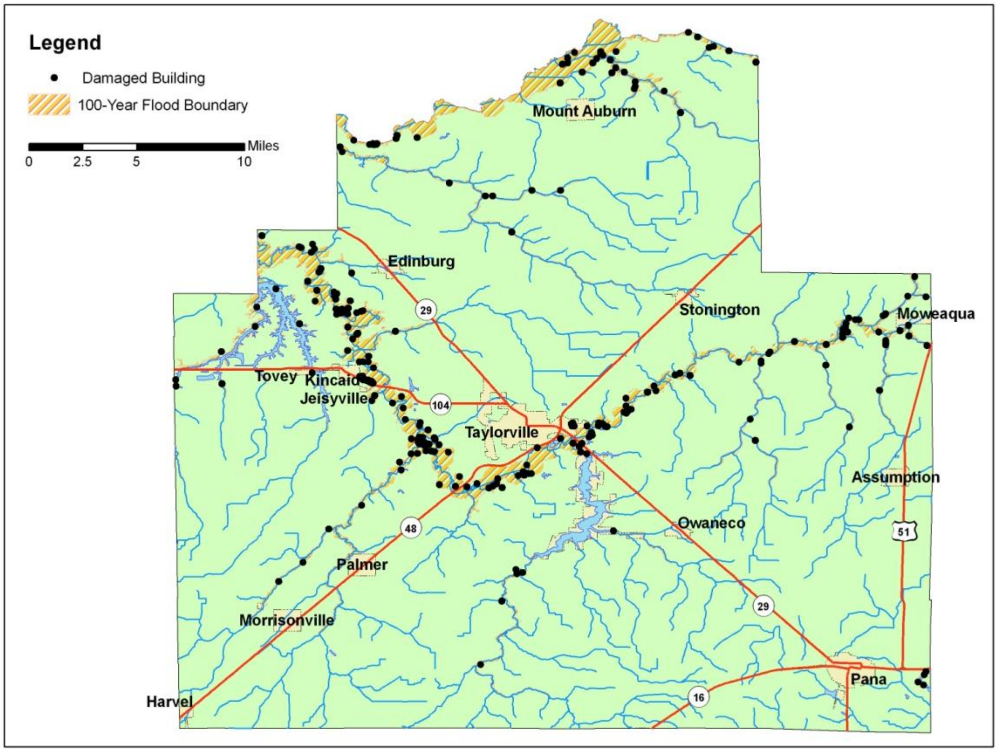
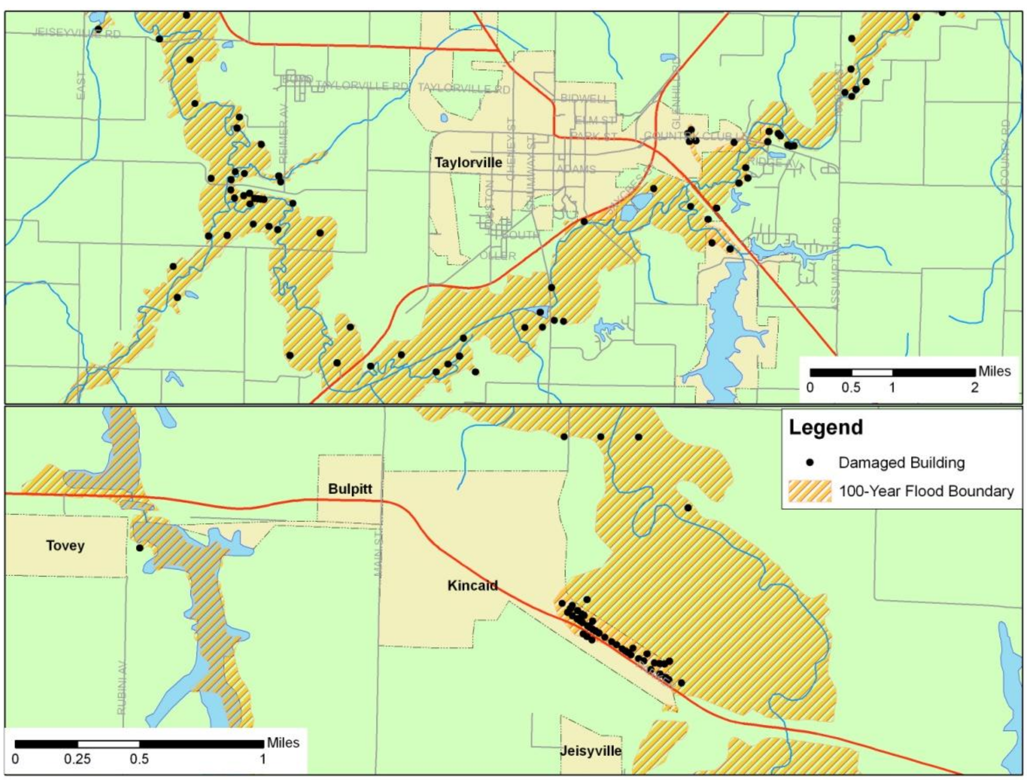


Figure 4-8: Christian County Urban Areas (Taylorville and Kincaid) Flood-Prone Areas (100-Year Flood)



Critical Facilities

A critical facility will encounter many of the same impacts as other buildings within the flood boundary. These impacts can include structural failure, extensive water damage to the facility and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

The analysis identified no critical facilities that are subject to downstream flooding.

Infrastructure

The types of infrastructure that could be impacted by a flood include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available for this plan, it is important to emphasize that any number of these items could become damaged in the event of a flood. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could also fail or become impassable, causing traffic risks.

Vulnerability Analysis for Flash Flooding

Flash flooding could affect any low lying location within this jurisdiction; therefore, a significant portion of the county’s population and buildings are vulnerable to a flash flood. These structures can expect the same impacts as discussed in a riverine flood.

A map and list of all critical facilities is included as Appendix F.

Vulnerability Analysis for Dam and Levee Failure

An EAP is required to assess the effect of dam failure on these communities. In order to be considered creditable flood protection structures on FEMA's flood maps, levee owners must provide documentation to prove the levee meets design, operation, and maintenance standards for protection against the "one-percent-annual chance" flood.

Vulnerability to Future Assets/Infrastructure for Flooding

Flash flooding may affect any low lying location within the county; therefore many buildings and infrastructure are vulnerable to flash flooding. Currently, the Christian County planning commission reviews new development for compliance with the local zoning ordinance. At this time no construction is planned within the area of the 100-year floodplain. Therefore, there is no new construction which will be vulnerable to a 100-year flood.

Vulnerability to Future Assets/Infrastructure for Dam and Levee Failure

The Christian County planning commission reviews new development for compliance with the local zoning ordinance.

Analysis of Community Development Trends

Controlling floodplain development is the key to reducing flood-related damages. Areas with recent development within the county may be more vulnerable to drainage issues. Storm drains and sewer systems are usually most susceptible. Damage to these can cause the back up of water, sewage, and debris into homes and basements, causing structural and mechanical damage as well as creating public health hazards and unsanitary conditions.

4.4.3 Earthquake Hazard

Hazard Definition for Earthquake Hazard

An earthquake is a sudden, rapid shaking of the earth caused by the breaking and shifting of rock beneath the earth's surface. For hundreds of millions of years, the forces of plate tectonics have shaped Earth as the huge plates that form the earth's surface move slowly over, under, and past each other. Sometimes the movement is gradual. At other times, the plates are locked together unable to release the accumulating energy. When the accumulated energy grows strong enough, the plates break free causing the ground to shake.

Most earthquakes occur at the boundaries where the plates meet; however, some earthquakes occur in the middle of plates, as is the case for seismic zones in the Midwestern United States. The most seismically active area in the Midwest is the New Madrid Seismic Zone. Scientists have learned that the New Madrid fault system may not be the only fault system in the Central U.S. capable of producing damaging earthquakes. The Wabash Valley fault system in Illinois and Indiana shows evidence of large earthquakes in its geologic history, and there may be other, as yet unidentified, faults that could produce strong earthquakes.

Ground shaking from strong earthquakes can collapse buildings and bridges; disrupt gas, electric, and phone service; and sometimes trigger landslides, avalanches, flash floods, fires, and huge destructive ocean waves (tsunamis). Buildings with foundations resting on unconsolidated landfill and other unstable soil and trailers and homes not tied to their foundations are at risk because they can be shaken off their mountings during an earthquake. When an earthquake occurs in a populated area it may cause deaths, injuries, and extensive property damage.

The possibility of the occurrence of a catastrophic earthquake in the central and eastern United States is real as evidenced by history and described throughout this section. The impacts of significant earthquakes affect large areas, terminating public services and systems needed to aid the suffering and displaced. These impaired systems are interrelated in the hardest struck zones. Power lines, water and sanitary lines, and public communication may be lost; and highways, railways, rivers, and ports may not allow transportation to the affected region. Furthermore, essential facilities, such as fire and police departments and hospitals, may be disrupted if not previously improved to resist earthquakes.

As with hurricanes, mass relocation may be necessary, but the residents who are suffering from the earthquake can neither leave the heavily impacted areas nor receive aid or even communication in the aftermath of a significant event.

Magnitude, which is determined from measurements on seismographs, measures the energy released at the source of the earthquake. Intensity measures the strength of shaking produced by the earthquake at a certain location and is determined from effects on people, human structures, and the natural environment. Earthquake magnitudes and their corresponding intensities are listed in tables 4-22 and 4-23.

Source: http://earthquake.usgs.gov/learning/topics/mag_vs_int.php

Table 4-22: Abbreviated Modified Mercalli Intensity Scale

Mercalli Intensity	Description
I	Not felt except by a very few under especially favorable conditions.
II	Felt only by a few persons at rest, especially on upper floors of buildings.
III	Felt quite noticeably by persons indoors, especially on upper floors of buildings. Many people do not recognize it as an earthquake. Standing motor cars may rock slightly. Vibrations similar to the passing of a truck. Duration estimated.
IV	Felt indoors by many, outdoors by few during the day. At night, some awakened. Dishes, windows, doors disturbed; walls make cracking sound. Sensation like heavy truck striking building. Standing motor cars rocked noticeably.
V	Felt by nearly everyone; many awakened. Some dishes, windows broken. Unstable objects overturned. Pendulum clocks may stop.
VI	Felt by all, many frightened. Some heavy furniture moved; a few instances of fallen plaster. Damage slight.
VII	Damage negligible in buildings of good design and construction; slight to moderate in well-built ordinary structures; considerable damage in poorly built or badly designed structures; some chimneys broken.
VIII	Damage slight in specially designed structures; considerable damage in ordinary substantial buildings with partial collapse. Damage great in poorly built structures. Fall of chimneys, factory stacks, columns, monuments, walls. Heavy furniture overturned.
IX	Damage considerable in specially designed structures; well-designed frame structures thrown out of plumb. Damage great in substantial buildings, with partial collapse. Buildings shifted off foundations.
X	Some well-built wooden structures destroyed; most masonry and frame structures destroyed with foundations. Rails bent.
XI	Few, if any (masonry) structures remain standing. Bridges destroyed. Rails bent greatly.
XII	Damage total. Lines of sight and level are distorted. Objects thrown into the air.

Table 4-23: Earthquake Magnitude vs. Modified Mercalli Intensity Scale

Earthquake Magnitude	Typical Maximum Modified Mercalli Intensity
1.0 - 3.0	I
3.0 - 3.9	II - III
4.0 - 4.9	IV - V
5.0 - 5.9	VI - VII
6.0 - 6.9	VII - IX
7.0 and higher	VIII or higher

Previous Occurrences for Earthquake Hazard

Numerous instrumentally measured earthquakes have occurred in Illinois. In the past few decades, with many precise seismographs positioned across Illinois, measured earthquakes have varied in magnitude from very low microseismic events of M=1–3 to larger events up to M=5.4. Microseismic events are usually only detectable by seismographs and rarely felt by anyone. The most recent earthquake in northern-central Illinois—as of the date of this report—occurred on February 10, 2010 at 3:59:35 local time about 3.0 km (2 miles) east-northeast of Virgil, IL and measured 3.8 in magnitude.

The consensus of opinion among seismologists working in the Midwest is that a magnitude 5.0 to 5.5 event could occur virtually anywhere at any time throughout the region. Earthquakes occur in Illinois all the time, although damaging quakes are very infrequent. Illinois earthquakes causing minor damage occur on average every 20 years, although the actual timing is extremely variable. Most recently, a magnitude 5.2 earthquake shook southeastern Illinois on April 18, 2008, causing minor damage in the Mt Carmel, IL area. Earthquakes resulting in more serious damage have occurred about every 70 to 90 years mainly in Southern Illinois.

Seismic activity on the New Madrid Seismic Zone of southeastern Missouri is very significant both historically and at present. On December 16, 1811 and January 23 and February 7 of 1812, three earthquakes struck the central U.S. with magnitudes estimated to be 7.5-8.0. These earthquakes caused violent ground cracking and volcano-like eruptions of sediment *(sand blows)* over an area of >10,500 km^2, and uplift of a 50 km by 23 km zone (the Lake County uplift). The shaking was felt over a total area of over 10 million km^2 (the largest felt area of any historical earthquake). Of all the historical earthquakes that have struck the U.S., an 1811-style event would do the most damage if it recurred today.

The New Madrid earthquakes are especially noteworthy because the seismic zone is in the center of the North American Plate. Such intraplate earthquakes are felt, and do damage, over much broader areas than comparable earthquakes at plate boundaries. The precise driving force responsible for activity on the New Madrid seismic zone is not known, but most scientists infer that it is compression transmitted across the North American Plate. That compression is focused on New Madrid because it is the site of a Paleozoic structure—the Reelfoot Rift—which is a zone of weakness in the crust.

The United States Geological Survey (USGS) and the Center for Earthquake Research and Information (CERI) at the University of Memphis estimate the probability of a repeat of the 1811–1812 type earthquakes (magnitude 7.5–8.0) is 7%–10% over the next 50 years (*USGS Fact Sheet 2006-3125*.) Frequent large earthquakes on the New Madrid seismic zone are geologically puzzling because the region shows relatively little deformation. Three explanations have been proposed: 1) recent seismological and geodetic activity is still a short-term response to the 1811–12 earthquakes; 2) activity is irregular or cyclic; or 3) activity began only in the recent geologic past. There is some dispute over how often earthquakes like the 1811–12 sequence occur. Many researchers estimate a recurrence interval of between 550 and 1100 years; other researchers suggest that either the magnitude of the 1811–12 earthquakes have been over-stated, or else the actual frequency of these events is less. It is fair to say, however, that even if the 1811–12 shocks were just magnitude ~7 events, they nonetheless caused widespread damage and would do the same if another such earthquake or earthquake sequence were to strike today.

[Above: New Madrid earthquakes and seismic zone modified from N. Pinter, 1993, Exercises in Active Tectonic history adapted from *Earthquake Information Bulletin*, 4(3), May-June 1972. *http://earthquake.usgs.gov/regional/states/illinois/history.php*]

The earliest reported earthquake in Illinois was in **1795**. This event was felt at Kaskaskia, IL for a minute and a half and was also felt in Kentucky. At Kaskaskia, subterranean noises were heard. Due to the sparse frontier population, an accurate location is not possible, and the shock may have actually originated outside the state.

An intensity VI-VII earthquake occurred on **April 12, 1883**, awakening several people in Cairo, IL. One old frame house was significantly damaged, resulting in minor injuries to the inhabitants. This is the only record of injury in the state due to earthquakes.

On **October 31, 1895** a large M6.8 occurred at Charleston, Missouri, just south of Cairo. Strong shaking caused eruptions of sand and water at many places along a line roughly 30 km (20 mi) long. Damage occurred in six states, but most severely at Charleston, with cracked walls, windows shattered, broken plaster, and chimneys fallen. Shaking was felt in 23 states from Washington, D.C. to Kansas and from southernmost Canada to New Orleans, LA.

A Missouri earthquake on **November 4, 1905**, cracked walls in Cairo. Aftershocks were felt over an area of 100,000 square miles in nine states. In Illinois, it cracked the wall of the new education building in Cairo and a wall at Carbondale, IL.

Among the largest earthquakes occurring in Illinois was the **May 26, 1909** shock, which knocked over many chimneys at Aurora. It was felt over 500,000 square miles and strongly felt in Iowa and Wisconsin. Buildings swayed in Chicago where there was fear that the walls would collapse. Just under two months later, a second Intensity VII earthquake occurred on **July 18, 1909**, damaged chimneys in Petersburg, IL, Hannibal, MO, and Davenport, IA. Over twenty windows were broken, bricks loosened and plaster cracked in the Petersburg area. This event was felt over 40,000 square miles.

On **November 7, 1958**, a shock along the Indiana border resulted in damage at Bartelso, Dale and Maunie, IL. Plaster cracked and fell, and a basement wall and floor were cracked.

On **August 14, 1965**, a sharp but local shock occurred at Tamms, IL, a town of about 600 people. The magnitude 5 quake damaged chimneys, cracked walls, knocked groceries from the shelves, and muddied the water supply. Thunderous earth noises were heard. This earthquake was only felt within a 10 mile radius of Tamms, in communities such as Elco, Unity, Olive Branch, and Olmsted, IL. Six aftershocks were felt.

An earthquake of Intensity VII occurred on **November 9, 1968**. This magnitude 5.3 shock was felt over an area of 580,000 square miles in 23 states. There were reports of people in tall buildings in Ontario and Boston feeling the shock. Damage consisted of bricks being knocked from chimneys, broken windows, toppled television antenna, and cracked plaster. There were scattered reports of cracked foundations, fallen parapets, and overturned tombstones. Chimney damage was limited to buildings 30 to 50 years old. Many people were frightened. Church bells rang at Broughton and several other towns. Loud rumbling earthquake noise was reported in many communities.

Dozens of other shocks originating in Missouri, Arkansas, Kansas, Nebraska, Tennessee, Indiana, Ohio, Michigan, Kentucky, and Canada have been felt in Illinois without causing damage. There have been three earthquakes slightly greater than magnitude 5.0 and Intensity level VII which occurred in 1968, 1987 and 2008 and that were widely felt throughout southern Illinois and the midcontinent.

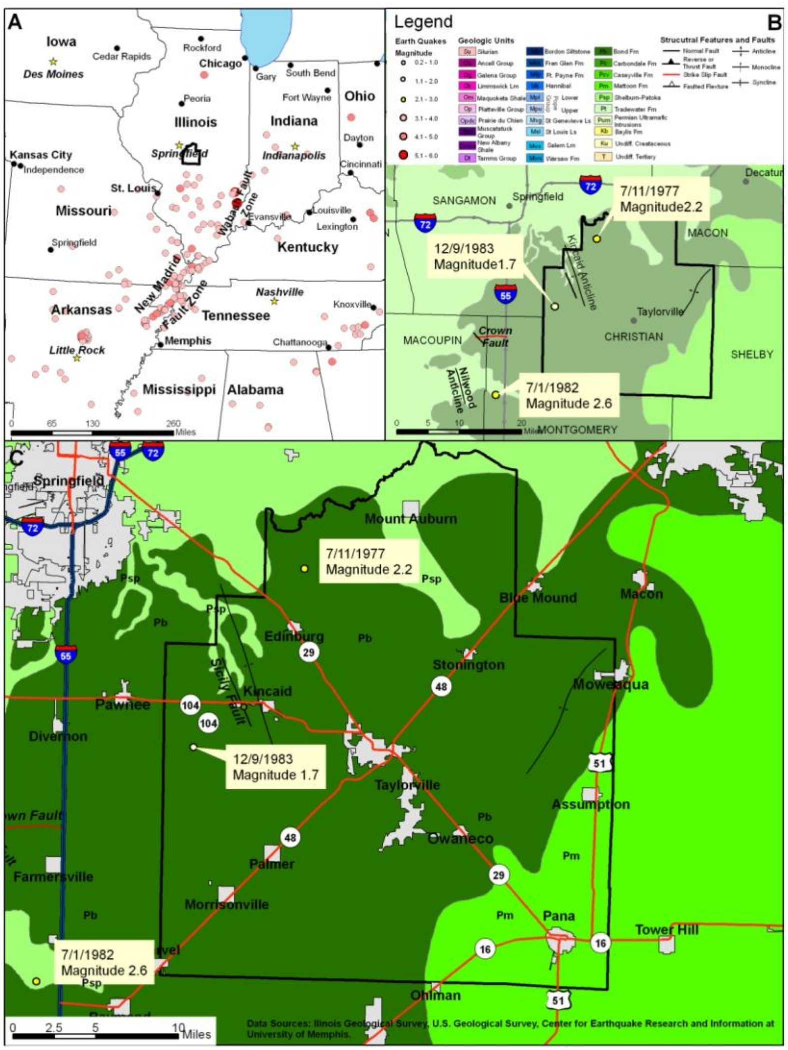
Above text adapted from *http://earthquake.usgs.gov/regional/states/illinois/history.php* and from *Seismicity of the United States, 1568-1989 (Revised), C.W. Stover and J.L. Coffman, U.S. Geological Survey Professional Paper 1527, United States Government Printing Office, Washington: 1993.*

Geographic Location for Earthquake Hazard

Christian County occupies a region susceptible to earthquakes. Regionally, the two most significant zones of seismic activity are the New Madrid Seismic Zone and the Wabash Valley Fault System. The epicenters of two small earthquakes (M1.7 and M2.2) have been recorded in Christian County (Figure 4-9b). The geologic mechanism related to the minor earthquakes is poorly understood. Return periods for large earthquakes within the New Madrid System are estimated to be ~500–1000 years; moderate quakes between magnitude 5.5 and 6.0 can recur within approximately 150 years or less. The Wabash Valley Fault System extends nearly the entire length of southern Illinois and has the potential to generate an earthquake of sufficient strength to cause damage between St. Louis, MO and Indianapolis, IN.

Figure 4-9 depicts the following: a) Location of notable earthquakes in the Illinois region with inset of Christian County; b) Generalized geologic bedrock map with earthquake epicenters, geologic structures, and inset of Christian County; c) Geologic and earthquake epicenter map of Christian County.

Figure 4-9 a, b, c: Christian County Earthquakes



Hazard Extent for Earthquake Hazard

The extent of the earthquake is countywide. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. A National Earthquake Hazards Reduction Program (NEHRP) compliant soils map was used for the analysis which was provided by ISGS. The map identifies the soils most susceptible to failure.

Risk Identification for Earthquake Hazard

A Based on historical information as well as current USGS and SIU research and studies, future earthquakes in Christian County are possible. According to the Christian County planning team RPI assessment, earthquake is ranked as the number five hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
1	x	4	=	4

Vulnerability Analysis for Earthquake Hazard

This hazard could impact the entire jurisdiction equally; therefore, the entire county's population and all buildings are vulnerable to an earthquake and can expect the same impacts within the affected area. To accommodate this risk, this plan will consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities are vulnerable to earthquakes. A critical facility would encounter many of the same impacts as any other building within the county. These impacts include structural failure and loss of facility functionality (e.g. a damaged police station will no longer be able to serve the community). A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-6. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure and loss of building function which could result in indirect impacts (e.g. damaged homes will no longer be habitable causing residents to seek shelter).

Infrastructure

During an earthquake, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan, it is important to emphasize that any number of these items could become damaged in the event of an earthquake. The impacts to these items include broken, failed, or impassable roadways, broken or failed utility lines (e.g. loss of power or gas to community), and railway failure from broken or impassable railways. Bridges could also fail or become impassable causing traffic risks. Typical scenarios are described to gauge the anticipated impacts of earthquakes in the county in terms of numbers and types of buildings and infrastructure.

The SIU-Polis team reviewed existing geological information and recommendations for earthquake scenarios. A deterministic and a probabilistic earthquake scenario were developed to provide a reasonable basis for earthquake planning in Christian County. The deterministic scenario was a moment magnitude of 5.5 with the epicenter located along the Sicily Fault near the Village of Kincaid in Christian County. This represents a realistic scenario for planning purposes.

Additionally, the earthquake loss analysis included a probabilistic scenario based on ground shaking parameters derived from U.S. Geological Survey probabilistic seismic hazard curves for the earthquake with the 500-year return period. This scenario evaluates the average impacts of a multitude of possible earthquake epicenters with a magnitude that would be typical of that expected for a 500-year return period.

The following earthquake hazard modeling scenarios were performed:

- 5.5 magnitude earthquake local epicenter
- 500-year return period event

Modeling a deterministic scenario requires user input for a variety of parameters. One of the most critical sources of information that is required for accurate assessment of earthquake risk is soils data. Fortunately, a National Earthquake Hazards Reduction Program (NEHRP) soil classification map exists for Illinois. NEHRP soil classifications portray the degree of shear-wave amplification that can occur during ground shaking. FEMA provided a soils map and liquefaction potential map that was used by HAZUS-MH.

Earthquake hypocenter depths in Illinois range from less than 1.0 to ~25.0 km. The average hypocenter depth, ~10.0 km, was used for the deterministic earthquake scenario. For this scenario type HAZUS-MH also requires the user to define an attenuation function. To maintain consistency with the USGS's (2006) modeling of strong ground motion in the central United States, the Toro et al. (1997) attenuation function was used for the deterministic earthquake scenario.

The building losses are broken into two categories: direct building losses and business interruption losses. The direct building losses are the estimated costs to repair or replace the damage caused to the building and its contents. The business interruption losses are the losses associated with inability to operate a business because of the damage sustained during the earthquake. Business interruption losses also include the temporary living expenses for those people displaced from their homes because of the earthquake.

Results for 5.5 Magnitude Earthquake in Christian County

The results of the initial analysis, the 5.5 magnitude earthquake with an epicenter along the Sicily Fault near the Village of Kincaid are depicted in Tables 4-24 and 4-25 and Figure 4-10.

HAZUS estimates that approximately 1,693 buildings will be at least moderately damaged. This is more than 9% of the total number of buildings in the region. It is estimated that 69 buildings will be damaged beyond repair.

The total building related losses totaled $105 million; 18% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which comprised more than 60% of the total loss.

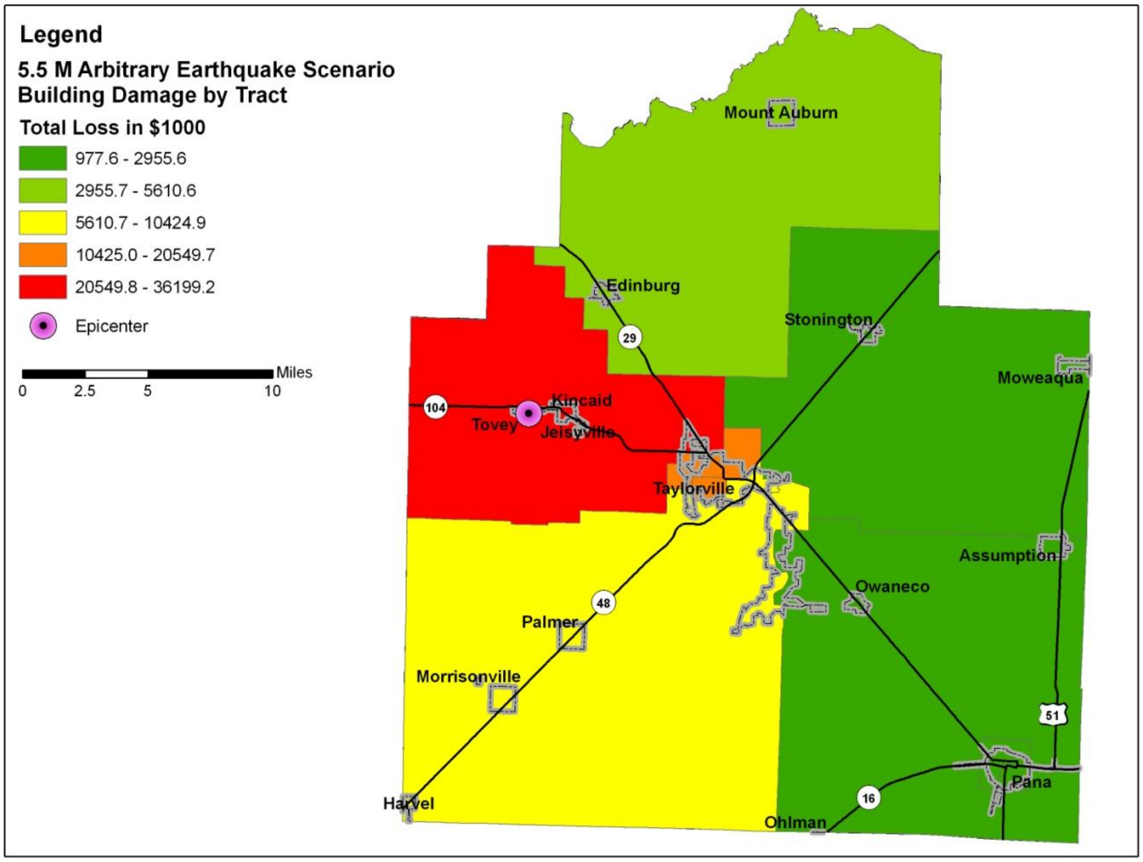
Table 4-24: Christian County 5.5M Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	204	1.41	42	1.49	32	2.49	11	3.41	2	2.67
Commercial	492	3.40	113	4.01	79	6.05	25	7.69	4	6.48
Education	26	0.18	6	0.20	4	0.32	1	0.40	0	0.47
Government	26	0.18	6	0.22	5	0.38	1	0.45	0	0.55
Industrial	132	0.91	29	1.05	22	1.72	8	2.42	1	1.97
Other Residential	3,877	26.76	758	26.98	405	31.18	102	31.42	20	28.51
Religion	69	0.48	14	0.49	9	0.69	3	0.88	1	0.82
Single Family	9,660	66.69	1,841	65.57	743	57.17	173	53.34	40	58.53
Total	**14,486**		**2,808**		**1,300**		**324**		**69**	

Table 4-25: Christian County 5.5M Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.13	2.61	0.20	0.39	3.33
	Capital-Related	0.00	0.05	2.49	0.12	0.09	2.75
	Rental	1.28	0.57	1.34	0.07	0.16	3.42
	Relocation	4.69	0.64	2.06	0.30	1.26	8.96
	Subtotal	**5.97**	**1.39**	**8.50**	**0.69**	**1.91**	**18.45**
Capital Stock Loses							
	Structural	6.91	1.20	2.51	0.93	1.83	13.37
	Non_Structural	27.70	5.95	7.63	3.32	4.18	48.80
	Content	11.58	1.89	4.79	2.52	2.77	23.56
	Inventory	0.00	0.00	0.17	0.61	0.11	0.89
	Subtotal	**46.19**	**9.04**	**15.10**	**7.38**	**8.89**	**86.61**
	Total	**52.16**	**10.43**	**23.60**	**8.07**	**10.80**	**105.06**

Figure 4-10: Christian County 5.5M Scenario-Building Economic Losses in Thousands of Dollars



Christian County 5.5M Scenario—Essential Facility Losses

Before the earthquake, the region had 167 care beds available for use. On the day of the earthquake, the model estimates that only 54 care beds (33%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 86% of the beds will be back in service. By day 30, 96% will be operational.

Results 500-Year Probabilistic Scenario

The results of the 500-year probabilistic analysis are depicted in Tables 4-26 and 4-27. HAZUS-MH estimates that approximately 727 buildings will be at least moderately damaged. This is more than 4% of the total number of buildings in the region. It is estimated that 12 buildings will be damaged beyond repair. The total building-related losses totaled $28.56 million; 25% of the estimated losses were related to the business interruption of the region. By far, the largest loss was sustained by the residential occupancies, which made up more than 59% of the total loss.

Table 4-26: 500-Year Probabilistic Scenario-Damage Counts by Building Occupancy

	None		Slight		Moderate		Extensive		Complete	
	Count	(%)	Count	(%)	Count	(%)	Count	(%)	Count	(%)
Agriculture	230	1.39	35	2.05	21	3.42	5	4.37	0	2.66
Commercial	572	3.45	87	5.11	44	7.28	9	9.00	1	6.28
Education	30	0.18	5	0.27	2	0.40	0	0.45	0	0.53
Government	32	0.19	5	0.27	2	0.39	0	0.36	0	0.42
Industrial	154	0.93	23	1.37	12	2.04	3	2.51	0	1.56
Other Residential	4,425	26.72	499	29.36	206	33.70	28	27.30	3	25.24
Religion	78	0.47	10	0.61	5	0.89	1	1.14	0	1.04
Single Family	11,041	66.67	1,035	60.96	317	51.88	57	54.88	8	62.26
Total	**16,562**		**1,698**		**611**		**104**		**12**	

Table 4-27: 500-Year Probabilistic Scenario-Building Economic Losses in Millions of Dollars

Category	Area	Single Family	Other Residential	Commercial	Industrial	Others	Total
Income Loses							
	Wage	0.00	0.07	1.08	0.05	0.15	1.36
	Capital-Related	0.00	0.03	0.96	0.03	0.04	1.06
	Rental	0.46	0.27	0.57	0.02	0.06	1.38
	Relocation	1.71	0.27	0.89	0.10	0.51	3.47
	Subtotal	**2.17**	**0.65**	**3.50**	**0.20**	**0.76**	**7.27**
Capital Stock Loses							
	Structural	2.59	0.59	1.01	0.25	0.77	5.21
	Non_Structural	6.85	1.74	1.92	0.51	1.06	12.08
	Content	1.76	0.37	0.92	0.32	0.52	3.89
	Inventory	0.00	0.00	0.03	0.07	0.02	0.13
	Subtotal	**11.21**	**2.70**	**3.88**	**1.15**	**2.37**	**21.31**
	Total	**13.38**	**3.35**	**7.38**	**1.34**	**3.13**	**28.58**

500-Year Probabilistic Scenario—Essential Facility Losses

Before the earthquake, the region had 167 care beds available for use. On the day of the earthquake, the model estimates that only 57 care beds (35%) are available for use by patients already in medical care facilities and those injured by the earthquake. After one week, 93% of the beds will be back in service. By day 30, 99% will be operational.

Vulnerability to Future Assets/Infrastructure for Earthquake Hazard

New construction, especially critical facilities, will accommodate earthquake mitigation design standards.

Analysis of Community Development Trends

Community development will occur outside of the low-lying areas in floodplains with a water table within five feet of grade that is susceptible to liquefaction.

In Meeting #4, the MHMP team discussed specific mitigation strategies for potential earthquake hazards. The discussion included strategies to harden and protect future, as well as existing, structures against the possible termination of public services and systems including power lines, water and sanitary lines, and public communication.

4.4.4 Thunderstorm Hazard

Hazard Definition for Thunderstorm Hazard

Severe thunderstorms are defined as thunderstorms with one or more of the following characteristics: strong winds, large damaging hail, or frequent lightning. Severe thunderstorms most frequently occur in Illinois during the spring and summer months, but can occur any month of the year at any time of day. A severe thunderstorm's impacts can be localized or can be widespread in nature. A thunderstorm is classified as severe when it meets one or more of the following criteria.

- Hail of diameter 0.75 inches or higher
- Frequent and dangerous lightning
- Wind speeds equal to or greater than 58 miles per hour

Hail

Hail is a product of a strong thunderstorm. Hail usually falls near the center of a storm, however strong winds occurring at high altitudes in the thunderstorm can blow the hailstones away from the storm center, resulting in damage in other areas near the storm. Hailstones range from pea-sized to baseball-sized, but hailstones larger than softballs have been reported on rare occasions.

Lightning

Lightning is a discharge of electricity from a thunderstorm. Lightning is often perceived as a minor hazard, but in reality lightning causes damage to many structures and kills or severely injures numerous people in the United States each year.

Severe Winds (Straight-Line Winds)

Straight-line winds from thunderstorms are a fairly common occurrence across Illinois. Straight-line winds can cause damage to homes, businesses, power lines, and agricultural areas, and may require temporary sheltering of individuals who are without power for extended periods of time.

Previous Occurrences for Thunderstorm Hazard

The NCDC database reported 42 hail storms in Christian County since 1958. Hail storms occur nearly every year in the late spring and early summer months. The most recent reported occurrence was in May 2009 when a large complex of thunderstorms produced numerous reports of large hail, heavy rainfall, and flash flooding.

Christian County hail storms are identified in Table 4-28. Pictures of some of the historical thunderstorm events are shown in Appendix D. Additional details of individual hazard events can also be found in Appendix D.

Table 4-28: Christian County Hail Storms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Christian	3/29/1968	Hail	1.50 in.	0	0	0	0
Christian	5/30/1974	Hail	0.75 in.	0	0	0	0
Christian	6/14/1974	Hail	1.00 in.	0	0	0	0
Christian	5/30/1975	Hail	1.50 in.	0	0	0	0
Christian	5/5/1977	Hail	1.75 in.	0	0	0	0
Christian	9/30/1977	Hail	1.75 in.	0	0	0	0
Christian	5/26/1982	Hail	1.00 in.	0	0	0	0
Christian	4/27/1984	Hail	0.75 in.	0	0	0	0
Christian	8/28/1984	Hail	1.75 in.	0	0	0	0
Christian	6/20/1990	Hail	1.75 in.	0	0	0	0
Taylorville	4/26/1994	Hail	0.75 in.	0	0	0	0
Taylorville	4/26/1994	Hail	1.00 in.	0	0	0	0
Sicily	4/7/1998	Hail	2.00 in.	0	0	0	0
Kincaid	5/22/1998	Hail	1.00 in.	0	0	0	0
Assumption	6/12/1998	Hail	0.75 in.	0	0	0	0
Palmer	6/1/1999	Hail	1.00 in.	0	0	0	0
Tovey	6/8/1999	Hail	1.00 in.	0	0	0	0
Pana	6/11/1999	Hail	0.75 in.	0	0	0	0
Morrisonville	4/20/2000	Hail	0.75 in.	0	0	0	0
Pana	5/12/2000	Hail	1.00 in.	0	0	0	0
Stonington	6/4/2000	Hail	1.00 in.	0	0	0	0
Morrisonville	8/18/2001	Hail	1.25 in.	0	0	0	0
Mt Auburn	4/19/2002	Hail	0.75 in.	0	0	0	0
Morrisonville	5/1/2002	Hail	2.00 in.	0	0	0	0
Taylorville	5/27/2002	Hail	1.00 in.	0	0	0	0
Rosamond	7/18/2003	Hail	1.00 in.	0	0	0	0
Kincaid	8/2/2003	Hail	0.88 in.	0	0	0	0
Morrisonville	8/2/2003	Hail	0.88 in.	0	0	0	0
Pana	3/30/2005	Hail	0.75 in.	0	0	0	0
Taylorville	5/24/2006	Hail	0.88 in.	0	0	0	0
Stonington	6/3/2006	Hail	1.75 in.	0	0	0	0
Pana	6/3/2006	Hail	0.75 in.	0	0	0	0
Pana	6/3/2006	Hail	1.00 in.	0	0	0	0
Owaneco	6/26/2006	Hail	1.00 in.	0	0	0	0
Taylorville	3/1/2007	Hail	0.75 in.	0	0	0	0
Taylorville	5/26/2007	Hail	1.00 in.	0	0	0	0
Mt Auburn	5/30/2008	Hail	0.75 in.	0	0	0	0
Kincaid	6/22/2008	Hail	0.75 in.	0	0	0	0
Palmer	5/7/2009	Hail	1.00 in.	0	0	0	0
Palmer	5/7/2009	Hail	1.00 in.	0	0	0	0
Stonington	5/7/2009	Hail	0.75 in.	0	0	0	0
Mt Auburn	5/15/2009	Hail	0.88 in.	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

The NCDC database reported one significant lightning strike in Christian County since 1958. It took place on July 11, 2008, in Taylorville, IL, and caused $35,000 worth of property damage.

The NCDC database identified 131 wind storms reported since 1958. These storms have been attributed with one death, two injuries and $457,000 in property damage. The most recent storm was reported in August 2009 produced wind gusts between 60 and 70 miles per hour.

As shown in Table 4-29, wind storms have historically occurred year-round with the greatest frequency and damage between May and July. The following table includes available top wind speeds for Christian County.

Table 4-29: Christian County Wind Storms*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Christian	6/10/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	6/10/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	6/10/1958	Tstm Wind	50 kts.	0	0	0	0
Christian	6/10/1958	Tstm Wind	50 kts.	0	0	0	0
Christian	6/13/1958	Tstm Wind	70 kts.	0	0	0	0
Christian	6/13/1958	Tstm Wind	70 kts.	0	0	0	0
Christian	6/13/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	6/13/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	6/13/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	6/13/1958	Tstm Wind	Not Measured	0	0	0	0
Christian	9/28/1959	Tstm Wind	Not Measured	0	0	0	0
Christian	9/30/1961	Tstm Wind	Not Measured	0	0	0	0
Christian	11/15/1973	Tstm Wind	Not Measured	0	0	0	0
Christian	3/4/1974	Tstm Wind	Not Measured	0	0	0	0
Christian	5/30/1974	Tstm Wind	Not Measured	0	0	0	0
Christian	11/9/1975	Tstm Wind	Not Measured	0	0	0	0
Christian	11/30/1975	Tstm Wind	Not Measured	0	0	0	0
Christian	2/16/1976	Tstm Wind	Not Measured	0	0	0	0
Christian	2/16/1976	Tstm Wind	Not Measured	0	0	0	0
Christian	2/23/1977	Tstm Wind	Not Measured	0	0	0	0
Christian	5/16/1977	Tstm Wind	Not Measured	0	0	0	0
Christian	8/6/1977	Tstm Wind	Not Measured	0	0	0	0
Christian	5/1/1983	Tstm Wind	Not Measured	0	0	0	0
Christian	4/29/1984	Tstm Wind	Not Measured	0	0	0	0
Christian	7/29/1986	Tstm Wind	Not Measured	0	0	0	0
Christian	7/31/1986	Tstm Wind	56 kts.	0	0	0	0
Christian	7/31/1986	Tstm Wind	Not Measured	0	0	0	0
Christian	7/31/1986	Tstm Wind	Not Measured	0	0	0	0
Christian	3/24/1988	Tstm Wind	Not Measured	0	0	0	0
Christian	4/5/1988	Tstm Wind	61 kts.	0	0	0	0
Christian	5/25/1989	Tstm Wind	Not Measured	0	0	0	0
Christian	6/1/1989	Tstm Wind	Not Measured	0	0	0	0
Christian	10/17/1990	Tstm Wind	Not Measured	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Christian	10/4/1991	Tstm Wind	Not Measured	0	0	0	0
Christian	6/17/1992	Tstm Wind	Not Measured	0	0	0	0
Christian	6/17/1992	Tstm Wind	Not Measured	0	0	0	0
Taylorville	4/26/1994	Tstm Winds	Not Measured	0	0	0	0
Morrisonville	7/2/1994	Tstm Winds	Not Measured	0	0	0	0
Mt. Auburn	5/27/1995	Tstm Winds	Not Measured	0	0	0	0
Stonington	5/27/1995	Tstm Winds	Not Measured	0	0	0	0
Taylorville	6/8/1995	Tstm Winds	Not Measured	0	0	0	0
Kincaid	6/20/1995	Tstm Winds	Not Measured	0	0	0	0
Morrisonville	6/20/1995	Tstm Winds	Not Measured	0	0	0	0
Taylorville	2/26/1996	Tstm Wind	50 kts.	0	0	0	0
Countywide	3/25/1996	High Wind	Not Measured	1	0	0	0
Countywide	4/28/1996	High Wind	53 kts.	0	0	0	0
Morrisonville	5/8/1996	Tstm Wind	Not Measured	0	0	0	0
Taylorville	5/8/1996	Tstm Wind	Not Measured	0	0	0	0
Taylorville	6/2/1996	Tstm Wind	Not Measured	0	0	0	0
Taylorville	10/29/1996	Tstm Wind	Not Measured	0	0	0	0
Countywide	4/6/1997	High Wind	56 kts.	0	0	0	0
Countywide	4/30/1997	High Wind	61 kts.	0	1	38K	0
Morrisonville	4/30/1997	Tstm Wind	Not Measured	0	0	0	0
Mt Auburn	8/24/1997	Tstm Wind	Not Measured	0	0	0	0
Countywide	9/29/1997	High Wind	55 kts.	0	0	0	0
Stonington	6/12/1998	Tstm Wind	Not Measured	0	0	0	0
Kincaid	6/18/1998	Tstm Wind	52 kts.	0	0	0	0
Countywide	6/29/1998	Tstm Wind	Not Measured	0	0	0	0
Kincaid	7/22/1998	Tstm Wind	Not Measured	0	0	0	0
Countywide	11/10/1998	High Wind	57 kts.	0	1	60K	0
Taylorville	11/10/1998	Tstm Wind	Not Measured	0	0	40K	0
Harvel	4/5/1999	Tstm Wind	52 kts.	0	0	0	0
Sicily	4/8/1999	Tstm Wind	Not Measured	0	0	0	0
Pana	4/8/1999	Tstm Wind	63 kts.	0	0	0	0
Countywide	6/1/1999	Tstm Wind	61 kts.	0	0	0	0
Pana	6/11/1999	Tstm Wind	Not Measured	0	0	0	0
Edinburg	8/12/1999	Tstm Wind	Not Measured	0	0	0	0
Stonington	5/26/2000	Tstm Wind	Not Measured	0	0	0	0
Edinburg	6/14/2000	Tstm Wind	Not Measured	0	0	0	0
Taylorville	6/23/2000	Tstm Wind	Not Measured	0	0	0	0
Stonington	7/5/2000	Tstm Wind	Not Measured	0	0	0	0
Stonington	8/2/2000	Tstm Wind	Not Measured	0	0	0	0
Palmer	2/9/2001	Tstm Wind	50 kts.	0	0	0	0
Taylorville	5/17/2001	Tstm Wind	50 kts.	0	0	0	0
Taylorville	5/22/2001	Tstm Wind	50 kts.	0	0	0	0
Kincaid	5/23/2001	Tstm Wind	50 kts.	0	0	0	0
Pana	5/23/2001	Tstm Wind	50 kts.	0	0	0	0
Grove City	7/4/2001	Tstm Wind	50 kts.	0	0	0	0
Owaneco	7/4/2001	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Taylorville	7/17/2001	Tstm Wind	50 kts.	0	0	0	0
Taylorville	7/23/2001	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	8/30/2001	Tstm Wind	50 kts.	0	0	0	0
Pana	10/24/2001	Tstm Wind	50 kts.	0	0	0	0
Kincaid	5/6/2003	Tstm Wind	50 kts.	0	0	0	0
Edinburg	5/10/2003	Tstm Wind	65 kts.	0	0	0	0
Taylorville	7/18/2003	Tstm Wind	62 kts.	0	0	0	0
Taylorville	5/23/2004	Tstm Wind	53 kts.	0	0	0	0
Countywide	5/24/2004	Tstm Wind	55 kts.	0	0	0	0
Pana	5/27/2004	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	5/31/2004	Tstm Wind	50 kts.	0	0	0	0
Mt Auburn	7/11/2004	Tstm Wind	55 kts.	0	0	0	0
Taylorville	7/22/2004	Tstm Wind	50 kts.	0	0	0	0
Countywide	11/24/2004	High Wind	52 kts.	0	0	0	0
Assumption	1/12/2005	Tstm Wind	50 kts.	0	0	0	0
Stonington	5/19/2005	Tstm Wind	50 kts.	0	0	0	0
Edinburg	6/8/2005	Tstm Wind	50 kts.	0	0	0	0
Taylorville	6/8/2005	Tstm Wind	50 kts.	0	0	0	0
Rosamond	6/8/2005	Tstm Wind	65 kts.	0	0	0	0
Grove City	6/13/2005	Tstm Wind	50 kts.	0	0	0	0
Edinburg	6/13/2005	Tstm Wind	50 kts.	0	0	0	0
Pana	8/13/2005	Tstm Wind	50 kts.	0	0	0	0
Mt Auburn	8/18/2005	Tstm Wind	50 kts.	0	0	0	0
Kincaid	9/8/2005	Tstm Wind	50 kts.	0	0	0	0
Stonington	9/19/2005	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	11/5/2005	Tstm Wind	52 kts.	0	0	0	0
Rosamond	4/2/2006	Tstm Wind	56 kts.	0	0	0	0
Taylorville	4/30/2006	Tstm Wind	58 kts.	0	0	0	0
Palmer	5/24/2006	Tstm Wind	50 kts.	0	0	0	0
Edinburg	5/24/2006	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	5/24/2006	Tstm Wind	52 kts.	0	0	0	0
Stonington	7/19/2006	Tstm Wind	56 kts.	0	0	0	0
Taylorville	3/1/2007	Tstm Wind	70 kts.	0	0	0	0
Kincaid	3/31/2007	Tstm Wind	61 kts.	0	0	0	0
Taylorville	5/2/2008	Tstm Wind	55 kts.	0	0	20K	0
Edinburg	5/11/2008	Tstm Wind	61 kts.	0	0	25K	0
Taylorville	5/30/2008	Tstm Wind	52 kts.	0	0	0	0
Edinburg	6/3/2008	Tstm Wind	61 kts.	0	0	15K	0
Taylorville	6/3/2008	Tstm Wind	52 kts.	0	0	2K	0
Roby	7/8/2008	Tstm Wind	52 kts.	0	0	8K	0
Pana	7/8/2008	Tstm Wind	52 kts.	0	0	5K	0
Taylorville	8/5/2008	Tstm Wind	52 kts.	0	0	2K	0
Taylorville	8/5/2008	Tstm Wind	52 kts.	0	0	8K	0
Kincaid	12/27/2008	Tstm Wind	52 kts.	0	0	55K	0
Sharpsburg	12/27/2008	Tstm Wind	52 kts.	0	0	15K	0
ILZ052	3/8/2009	High Wind	52 kts.	0	0	4K	0

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
ILZ045 - 052	3/8/2009	High Wind	52 kts.	0	0	15K	0
Owaneco	3/8/2009	Tstm Wind	52 kts.	0	0	40K	0
Vanderville	5/13/2009	Tstm Wind	65 kts.	0	0	25K	0
Morrisonville	8/4/2009	Tstm Wind	61 kts.	0	0	10K	0
Taylorville	8/4/2009	Tstm Wind	61 kts.	0	0	40K	0
Taylorville	8/19/2009	Tstm Wind	52 kts.	0	0	30K	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Thunderstorm Hazard

The entire county has the same risk for occurrence of thunderstorms. They can occur at any location within the county.

Hazard Extent for Thunderstorm Hazard

The extent of the historical thunderstorms varies in terms of the extent of the storm, the wind speed, and the size of hail stones. Thunderstorms can occur at any location within the county.

Risk Identification for Thunderstorm Hazard

Based on historical information, the occurrence of future high winds, hail, and lightning is highly likely. High winds with widely varying magnitudes are expected to happen. According to the RPI, thunderstorms and high wind damage ranked as the number two hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
4	x	2	=	8

Vulnerability Analysis for Thunderstorm Hazard

Severe thunderstorms are an equally distributed threat across the entire jurisdiction; therefore, the entire county's population and all buildings are vulnerable to a severe thunderstorm and can expect the same impacts within the affected area. This plan will therefore consider all buildings located within the county as vulnerable. The existing buildings and infrastructure in Christian County are discussed in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to severe thunderstorms. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure, damaging debris (trees or limbs), roofs blown off or windows broken by hail or high winds, fires caused by lightning, and loss of building functionality (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a severe thunderstorm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a severe thunderstorm. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

Potential Dollar Losses for Thunderstorm Hazard

A HAZUS-MH analysis was not completed for thunderstorms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a thunderstorm hazard, the available NCDC hazard information was condensed to include only thunderstorm hazards that occurred within the past ten years. Christian County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

It was determined that since 1999, Christian County has incurred $354,000 in damages relating to thunderstorms, including hail, lightning, and high winds. The resulting information is listed in Table 4-30.

Table 4-30: Christian County Property Damage (1999–Present)

Location or County	Date	Type	Property Damage
		1999 to 2007 Subtotal	$ 0
Taylorville	5/2/2008	Tstm Wind	$ 20,000
Edinburg	5/11/2008	Tstm Wind	$ 25,000
Edinburg	6/3/2008	Tstm Wind	$ 15,000
Taylorville	6/3/2008	Tstm Wind	$ 2,000
Roby	7/8/2008	Tstm Wind	$ 8,000
Taylorville	7/11/2008	Lightning	$ 35,000
Pana	8/5/2008	Tstm Wind	$ 5,000
Taylorville	8/5/2008	Tstm Wind	$ 2,000
Taylorville	12/27/2008	Tstm Wind	$ 8,000

Location or County	Date	Type	Property Damage	
Kincaid	12/27/2008	Tstm Wind	$	55,000
Sharpsburg	12/27/2008	Tstm Wind	$	15,000
		2008 Subtotal	$	190,000
Countywide	3/8/2009	High Wind	$	4,000
Countywide	3/8/2009	High Wind	$	!5,000
Owaneco	3/8/2009	Tstm Wind	$	40,000
Vanderville	5/13/2009	Tstm Wind	$	25,000
Morrisonville	8/4/2009	Tstm Wind	$	10,000
Taylorville	8/4/2009	Tstm Wind	$	40,000
Taylorville	8/19/2009	Tstm Wind	$	30,000
		2009 Subtotal	$	164,000
		Total Property Damage	**$**	**354,000**

The historical data is erratic and not wholly documented or confirmed. As a result, potential dollar losses for a future event cannot be precisely calculated; however, based on averages in the last decade, it can be determined that Christian County incurs an annual risk of approximately $354,000 per year.

Vulnerability to Future Assets/Infrastructure for Thunderstorm Hazard

All future development within the county and all communities will remain vulnerable to these events.

Analysis of Community Development Trends

Preparing for severe storms will be enhanced if officials sponsor a wide range of programs and initiatives to address the overall safety of county residents. New structures need to be built with more sturdy construction, and those structures already in place need to be hardened to lessen the potential impacts of severe weather. Community warning sirens to provide warning of approaching storms are also vital to preventing the loss of property and ensuring the safety of Christian County residents.

4.4.5 Drought and Extreme Heat Hazard

Hazard Definition for Drought Hazard

Drought is a climatic phenomenon that occurs in Christian County. The meteorological condition that creates a drought is below normal rainfall. However, excessive heat can lead to increased evaporation, which will enhance drought conditions. Droughts can occur in any month. Drought differs from normal arid conditions found in low rainfall areas. Drought is the consequence of a reduction in the amount of precipitation over an undetermined length of time (usually a growing season or more).

The severity of a drought depends on location, duration, and geographical extent. Additionally, drought severity depends on the water supply, usage demands made by human activities, vegetation, and agricultural operations. Drought brings several different problems that must be addressed. The quality and quantity of crops, livestock, and other agricultural assets will be affected during a drought. Drought can adversely impact forested areas leading to an increased potential for extremely destructive forest and woodland fires that could threaten residential, commercial, and recreational structures.

Hazard Definition for Extreme Heat Hazard

Drought conditions are often accompanied by extreme heat, which is defined as temperatures that hover 10°F or more above the average high for the area and last for several weeks. Extreme heat can occur in humid conditions when high atmospheric pressure traps the damp air near the ground or in dry conditions, which often provoke dust storms.

Common Terms Associated with Extreme Heat

Heat Wave: Prolonged period of excessive heat, often combined with excessive humidity

Heat Index: A number in degrees Fahrenheit that tells how hot it feels when relative humidity is added to air temperature. Exposure to full sunshine can increase the heat index by 15°F.

Heat Cramps: Muscular pains and spasms due to heavy exertion. Although heat cramps are the least severe, they are often the first signal that the body is having trouble with heat.

Heat Exhaustion: Typically occurs when people exercise heavily or work in a hot, humid place where body fluids are lost through heavy sweating. Blood flow to the skin increases, causing blood flow to decrease to the vital organs, resulting in a form of mild shock. If left untreated, the victim's condition will worsen. Body temperature will continue to rise and the victim may suffer heat stroke.

Heat and Sun Stroke: A life-threatening condition. The victim's temperature control system, which produces sweat to cool the body, stops working. The body's temperature can rise so high that brain damage and death may result if the body is not cooled quickly.

Source: FEMA

Previous Occurrences for Drought and Extreme Heat Hazard

The NCDC database reported seven drought/heat wave events in Christian County since 1995. The most recent reported event occurred in July 2006 across central and southeast Illinois. Afternoon high temperatures ranged from 94°F to 100°F most afternoons, with afternoon heat indices ranging from 105°F to 110°F. Overnight lows only fell into the mid-70s.

NCDC records of droughts/heat waves are identified in Table 4-31. Pictures of some of the historical drought events are shown in Appendix D. Additional details of individual hazard events can also be found in Appendix D.

Table 4-31: Christian County Drought/Heat Wave Events*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Statewide	07/26/97	Excessive Heat	N/A	2	0	0	0
Statewide	06/26/98	Excessive Heat	N/A	1	0	0	0
Statewide	07/20/99	Excessive Heat	N/A	4	0	0	0
Statewide	07/28/99	Excessive Heat	N/A	1	0	0	0
Statewide	07/22/05	Excessive Heat	N/A	1	0	0	0
Statewide	07/30/06	Heat	N/A	1	0	0	0
Statewide	08/01/06	Heat	N/A	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Drought and Extreme Heat Hazard

Droughts are regional in nature. All areas of the United States are vulnerable to the risk of drought and extreme heat.

Hazard Extent for Drought and Extreme Heat Hazard

Droughts and extreme heat can be widespread or localized events. The extent of the droughts varies both in terms of the extent of the heat and the range of precipitation.

Risk Identification for Drought/Extreme Heat Hazard

Based on historical information, future occurrences of extreme heat and drought are possible. According to the RPI, extreme heat/drought ranked as the number four hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
2	x	2	=	4

Vulnerability Analysis for Drought and Extreme Heat Hazard

Drought and extreme heat impacts are an equally distributed threat across the entire jurisdiction; therefore, the county is vulnerable to this hazard and can expect the same impacts within the affected area. According to FEMA, approximately 175 Americans die each year from extreme heat. Young children, elderly, and infirmed populations have the greatest risk.

The entire population and all buildings have been identified as at risk. The building exposure for Christian County, as determined from the building inventory is included in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to drought. A critical facility will encounter many of the same impacts as any other building within the jurisdiction, which should involve only minor damage. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather. Table 4-9 lists the types and numbers of all of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts similar to those discussed for critical facilities. These impacts include water shortages, fires as a result of drought conditions, and residents in need of medical care from the heat and dry weather.

Infrastructure

During a drought the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with a fire that could result from the hot, dry conditions. Since the county’s entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a heat wave. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); or railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

Vulnerability to Future Assets/Infrastructure for Drought/Extreme Heat Hazard

Future development will remain vulnerable to these events. Typically, some urban and rural areas are more susceptible than others. For example, urban areas are subject to water shortages during periods of drought. Excessive demands of the populated area place a limit on water resources. In rural areas, crops and livestock may suffer from extended periods of heat and drought. Dry conditions can lead to the ignition of wildfires that could threaten residential, commercial, and recreational areas.

Analysis of Community Development Trends

Because droughts and extreme heat are regional in nature, future development will be impacted across the county. Although urban and rural areas are equally vulnerable to this hazard, those living in urban areas may have a greater risk from the effects of a prolonged heat wave. The atmospheric conditions that create extreme heat tend to trap pollutants in urban areas, adding contaminated air to the excessively hot temperatures and creating increased health problems. Furthermore, asphalt and concrete store heat longer, gradually releasing it at night and producing high nighttime temperatures. This phenomenon is known as the “urban heat island effect.”

Source: FEMA

Local officials should address drought and extreme heat hazards by educating the public on steps to take before and during the event—for example, temporary window reflectors to direct heat back outside, staying indoors as much as possible, and avoiding strenuous work during the warmest part of the day.

4.4.6 Winter Storm Hazard

Hazard Definition for Winter Storm Hazard

Severe winter weather consists of various forms of precipitation and strong weather conditions. This may include one or more of the following: freezing rain, sleet, heavy snow, blizzards, icy roadways, extreme low temperatures, and strong winds. These conditions can cause human health risks such as frostbite, hypothermia, and death.

Ice (glazing) and Sleet Storms

Ice or sleet, even in small quantities, can result in hazardous driving conditions and can cause property damage. Sleet involves frozen raindrops that bounce when they hit the ground or other objects. Sleet does not stick to trees and wires. Ice storms, on the other hand, involve liquid rain that falls through subfreezing air and/or onto sub-freezing surfaces, freezing on contact with those surfaces. The ice coats trees, buildings, overhead wires, and roadways, sometimes causing extensive damage.

The most damaging winter storms in central Illinois have been ice storms. Ice storms occur when moisture-laden gulf air converges with the northern jet stream causing strong winds and heavy precipitation. This precipitation takes the form of freezing rain coating power and communication lines and trees with heavy ice. The winds will then cause the overburdened limbs and cables to snap; leaving large sectors of the population without power, heat, or communication. In the past few decades, including the winter of 2007–10, numerous snow and ice storm events have occurred in Illinois.

Snowstorms

Significant snowstorms are characterized by the rapid accumulation of snow, often accompanied by high winds, cold temperatures, and low visibility. A blizzard is categorized as a snowstorm with winds of 35 miles per hour or greater and/or visibility of less than one-quarter mile for three or more hours. The strong winds during a blizzard blow about falling and already existing snow, creating poor visibility and impassable roadways. Blizzards have the potential to result in property damage.

Illinois has repeatedly been struck by blizzards. Blizzard conditions cannot only cause power outages and loss of communication, but also make transportation difficult. The blowing of snow can reduce visibility to less than one-quarter mile, and the resulting disorientation makes even travel by foot dangerous if not deadly.

Severe Cold

Severe cold is characterized by the ambient air temperature dropping to around 0°F or below. These extreme temperatures can increase the likelihood of frostbite and hypothermia. High winds during severe cold events can enhance the air temperature’s effects. Fast winds during cold weather events can lower the wind chill factor (how cold the air feels on your skin). As a result, the time it takes for frostbite and hypothermia to affect a person’s body will decrease.

Previous Occurrences for Winter Storm Hazard

The NCDC database identified 33 winter storm and extreme cold events for Christian County since 1995. These storms have been attributed with 13 deaths and 39 injuries mostly related to motor vehicle accidences. The most recent reported event occurred in February 2008. A major winter storm swept through central Illinois, bringing heavy snow accumulation of approximately 6-12 inches. The NCDC winter storms are listed in Table 4-32. Pictures of some of the historical winter storm events are shown in Appendix D. Additional details of individual hazard events can also be found in Appendix D.

Table 4-32: Winter Storm Events*

Location or County	Date	Type	Magnitude	Deaths	Injuries	Property Damage	Crop Damage
Central Illinois	12/8/1995	Winter Storm	N/A	1	0	0	0
Central Illinois	12/18/1995	Winter Storm	N/A	1	0	0	0
Statewide	1/2/1996	Winter Storm	N/A	0	4	0	0
Statewide	1/4/1996	Winter Storm	N/A	0	0	0	0
Statewide	1/18/1996	Winter Storm	N/A	0	2	0	0
Statewide	2/2/1996	Extreme Cold	N/A	2	0	0	0
Statewide	11/25/1996	Winter Storm	N/A	0	0	0	0
Statewide	1/8/1997	Heavy Snow	N/A	0	6	0	0
Statewide	1/15/1997	Winter Storm	N/A	1	7	0	0
Statewide	1/24/1997	Winter Storm	N/A	0	0	0	0
Statewide	1/26/1997	Winter Storm	N/A	0	9	0	0
Statewide	12/30/1997	Heavy Snow	N/A	3	0	0	0
Statewide	1/14/1998	Winter Storm	N/A	0	0	0	0
Statewide	3/8/1998	Winter Storm	N/A	2	0	0	0
Statewide	1/1/1999	Heavy Snow	N/A	1	1	0	0
Statewide	1/5/1999	Extreme Cold	N/A	0	0	0	0
Statewide	1/13/1999	Ice Storm	N/A	0	0	0	0
Statewide	3/11/2000	Heavy Snow	N/A	1	9	0	0
Statewide	12/13/2000	Winter Storm	N/A	1	1	0	0
Statewide	2/26/2002	Heavy Snow	N/A	0	0	0	0
Statewide	3/25/2002	Winter Storm	N/A	0	0	0	0
Statewide	2/14/2003	Winter Storm	N/A	0	0	0	0
Statewide	3/21/2006	Blizzard	N/A	0	0	0	0
Statewide	11/30/2006	Winter Storm	N/A	0	0	0	0
Statewide	12/1/2006	Winter Storm	N/A	0	0	0	0
Statewide	1/12/2007	Ice Storm	N/A	0	0	0	0
Statewide	2/12/2007	Blizzard	N/A	0	0	0	0
Statewide	2/12/2007	Winter Storm	N/A	0	0	0	0
Statewide	4/5/2007	Frost/freeze	N/A	0	0	0	0
Statewide	12/8/2007	Ice Storm	N/A	0	0	0	0
Statewide	12/15/2007	Heavy Snow	N/A	0	0	0	0
Statewide	1/31/2008	Heavy Snow	N/A	0	0	0	0
Statewide	2/1/2008	Heavy Snow	N/A	0	0	0	0

* NCDC records are estimates of damage compiled by the National Weather Service from various local, state, and federal sources. However, these estimates are often preliminary in nature and may not match the final assessment of economic and property losses related to a given weather event.

Geographic Location for Winter Storm Hazard

Severe winter storms are regional in nature. Most of the NCDC data is calculated regionally or in some cases statewide.

Hazard Extent for Winter Storm Hazard

The extent of the historical winter storms varies in terms of storm location, temperature, and ice or snowfall. A severe winter storm can occur anywhere in the jurisdiction.

Risk Identification for Winter Storm Hazard

Based on historical information and input from the planning team, the occurrence of future winter storms is likely. Winter storms of varying magnitudes are expected to happen. According to the RPI, winter storms were ranked as the number one hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	**4**	=	12

Vulnerability Analysis for Winter Storm Hazard

Winter storm impacts are equally distributed across the entire jurisdiction; therefore, the entire county is vulnerable to a winter storm and can expect the same impacts within the affected area. The building exposure for Christian County, as determined from the building inventory, is included in Table 4-10.

Critical Facilities

All critical facilities are vulnerable to a winter storm. A critical facility will encounter many of the same impacts as other buildings within the jurisdiction. These impacts include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow. Table 4-9 lists the types and numbers of the essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These include loss of gas or electricity from broken or damaged utility lines, damaged or impassable roads and railways, broken water pipes, and roof collapse from heavy snow.

Infrastructure

During a winter storm, the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable it is important to emphasize that any number of these items could become damaged during a winter storm. Potential impacts include broken gas and/or electricity lines or damaged utility lines, damaged or impassable roads and railways, and broken water pipes.

Potential Dollar Losses for Winter Storm Hazard

A HAZUS-MH analysis was not completed for winter storms because the widespread extent of such a hazard makes it difficult to accurately model outcomes.

To determine dollar losses for a winter storm hazard, the available NCDC hazard information was condensed to include only winter storm hazards that occurred within the past ten years. Christian County's MHMP team then reviewed the property damages reported to NCDC and made any applicable updates.

It was determined that since 1999, Christian County has not incurred significant property damages from winter storms, including sleet/ice and heavy snow.

Vulnerability to Future Assets/Infrastructure for Winter Storm Hazard

Any new development within the county will remain vulnerable to these events.

Analysis of Community Development Trends

Because the winter storm events are regional in nature future development will be equally impacted across the county.

4.4.7 Hazardous Materials Storage and Transport Hazard

Hazard Definition for Hazardous Materials Storage and Transport Hazard

Illinois has numerous active transportation lines that run through many of its counties. Active railways transport harmful and volatile substances between our borders every day. The transportation of chemicals and substances along interstate routes is commonplace in Illinois. The rural areas of Illinois have considerable agricultural commerce creating a demand for fertilizers, herbicides, and pesticides to be transported along rural roads. These factors increase the chance of hazardous material releases and spills throughout the state of Illinois.

The release or spill of certain substances can cause an explosion. Explosions result from the ignition of volatile products such as petroleum products, natural and other flammable gases, hazardous materials/chemicals, dust, and bombs. An explosion can potentially cause death, injury, and property damage. In addition, a fire routinely follows an explosion which may cause further damage and inhibit emergency response. Emergency response may require fire, safety/law enforcement, search and rescue, and hazardous materials units.

Previous Occurrences for Hazardous Materials Storage and Transport Hazard

Christian County has not experienced a significantly large-scale hazardous material incident at a fixed site or during transport resulting in multiple deaths or serious injuries, although there have been many minor releases that have put local firefighters, hazardous materials teams, emergency management, and local law enforcement into action to try to stabilize these incidents and prevent or lessen harm to Christian County residents.

Geographic Location for Hazardous Materials Storage and Transport Hazard

The hazardous material hazards are countywide and are primarily associated with the transport of materials via highway, railroad, and/or river barge.

Hazard Extent for Hazardous Materials Storage and Transport Hazard

The extent of the hazardous material hazard varies both in terms of the quantity of material being transported as well as the specific content of the container.

Risk Identification for Hazardous Materials Release

Based on input from the planning team, the occurrence of a hazardous materials accident is likely. According to the RPI, Hazardous Materials Storage and Transport ranked as the number six hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	1	=	3

Vulnerability Analysis for Hazardous Materials Storage and Transport Hazard

Hazardous material impacts are an equally distributed threat across the entire jurisdiction; therefore, the entire county is vulnerable to a hazardous material release and can expect the same impacts within the affected area. The main concern during a release or spill is the population affected. The building exposure for Christian County, as determined from building inventory, is included in Table 4-10. This plan will therefore consider all buildings located within the county as vulnerable.

Critical Facilities

All critical facilities and communities within the county are at risk. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural failure due to fire or explosion and loss of function of the facility (e.g. a damaged police station will no longer be able to serve the community). Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is listed in Table 4-10. The buildings within the county can all expect the same impacts, similar to those discussed for critical facilities. These impacts include structural failure due to fire or explosion or debris and loss of function of the building (e.g. a damaged home will no longer be habitable causing residents to seek shelter).

Infrastructure

During a hazardous material release the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since an extensive inventory of the infrastructure is not available to this plan it is important to emphasize that any number of these items could become damaged in the event of a hazardous material release. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); and railway failure from broken or impassable railways. Bridges could fail or become impassable causing risk to traffic.

In terms of numbers and types of buildings and infrastructure, typical scenarios are described to gauge the anticipated impacts of hazardous material release events in the county.

The U.S. EPA's ALOHA (Areal Locations of Hazardous Atmospheres) model was utilized to assess the area of impact for an anhydrous ammonia release related to a train derailment at the junction of the Illinois and Midland Rail Line and the Norfolk Southern Rail Line on the Southside of Taylorville (Figure 4-15). The target area was selected for three primary reasons: 1) the high volume traffic, 2) the area is highly populated and 3) proximity to several critical facilities.

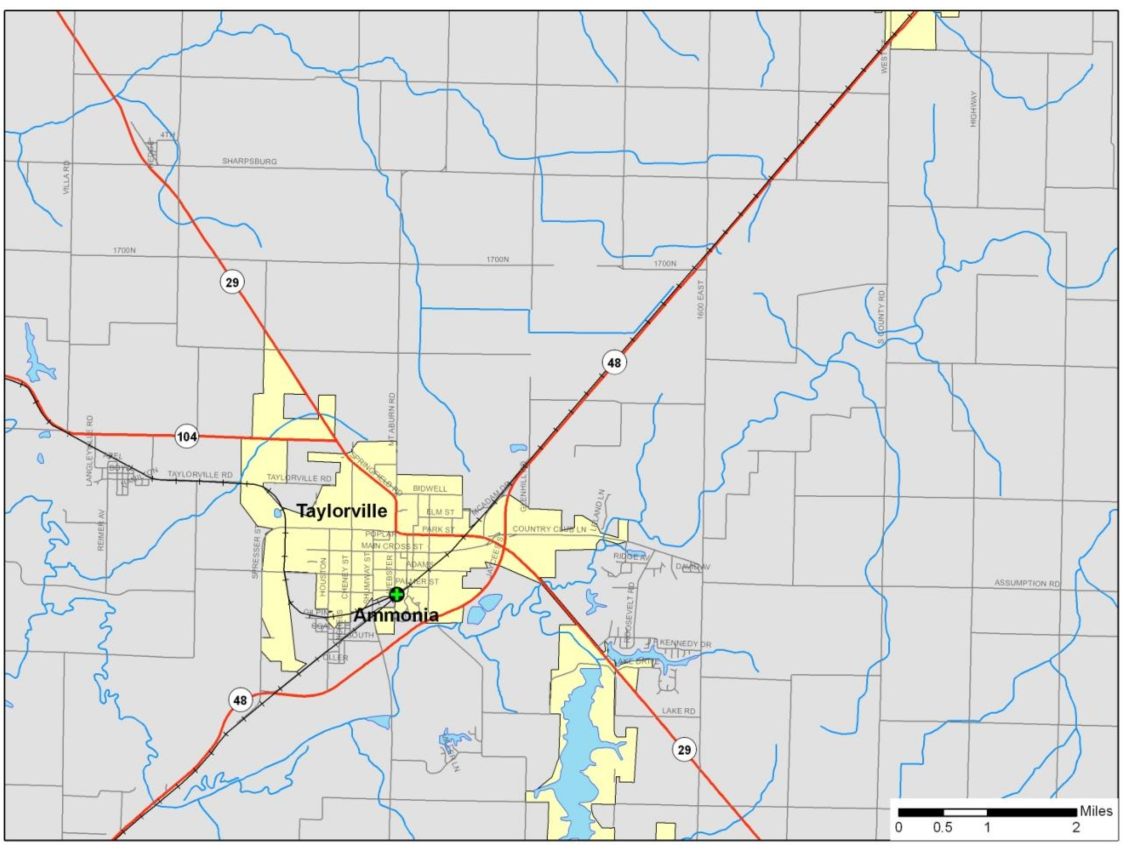
Anhydrous ammonia is a clear colorless gas with a strong odor. Contact with the unconfined liquid can cause frostbite. Though the gas is generally regarded as nonflammable, it can burn within certain vapor concentration limits with strong ignition. The fire hazard increases in the presence of oil or other combustible materials. Vapors from an anhydrous ammonia leak initially hug the ground, and prolonged exposure of containers to fire or heat may cause violent rupturing and rocketing. Long-term inhalation of low concentrations of the vapors or short-term inhalation of high concentrations has adverse health effects. Anhydrous ammonia is generally used as a fertilizer, a refrigerant, and in the manufacture of other chemicals.

Source: CAMEO

ALOHA is a computer program designed especially for use by people responding to chemical accidents, as well as for emergency planning and training. Anhydrous ammonia is a common chemical used in industrial operations and can be found in either liquid or gas form. Rail and truck tankers commonly haul anhydrous ammonia to and from facilities.

For this scenario, moderate atmospheric and climatic conditions with a slight breeze from the west were assumed. The target area was chosen due to its proximity to the residential, commercial, and essential facility locations. The geographic area covered in this analysis is depicted in Figure 4-11.

Figure 4-11: Location of Chemical Release



Analysis

The ALOHA atmospheric modeling parameters, depicted in Figure 4-12, were based upon a southwesterly wind speed of five miles per hour. The temperature was 70°F with 75% humidity and a cloud cover of five-tenths skies.

The source of the chemical spill is a horizontal, cylindrical-shaped tank. The diameter of the tank was set to 10.4 feet and the length set to 53 feet (33,500 gallons). At the time of its release, it was estimated that the tank was 85% full. The anhydrous ammonia in this tank is in its liquid state.

This release was based on a leak from a 2.5-inch-diameter hole, 12 inches above the bottom of the tank. According to the ALOHA parameters, approximately 7,530 pounds of material would be released per minute. The image in Figure 4-13 depicts the plume footprint generated by ALOHA.

Figure 4-12: ALOHA Plume Modeling Parameters

SITE DATA:
Location: TAYLORVILLE, ILLINOIS
Building Air Exchanges Per Hour: 0.32 (sheltered single storied)
Time: May 9, 2010 1123 hours CDT (using computer's clock)

CHEMICAL DATA:
Chemical Name: AMMONIA Molecular Weight: 17.03 g/mol
AEGL-1(60 min): 30 ppm AEGL-2(60 min): 160 ppm AEGL-3(60 min): 1100 ppm
IDLH: 300 ppm LEL: 160000 ppm UEL: 250000 ppm
Ambient Boiling Point: -28.9° F
Vapor Pressure at Ambient Temperature: greater than 1 atm
Ambient Saturation Concentration: 1,000,000 ppm or 100.0%

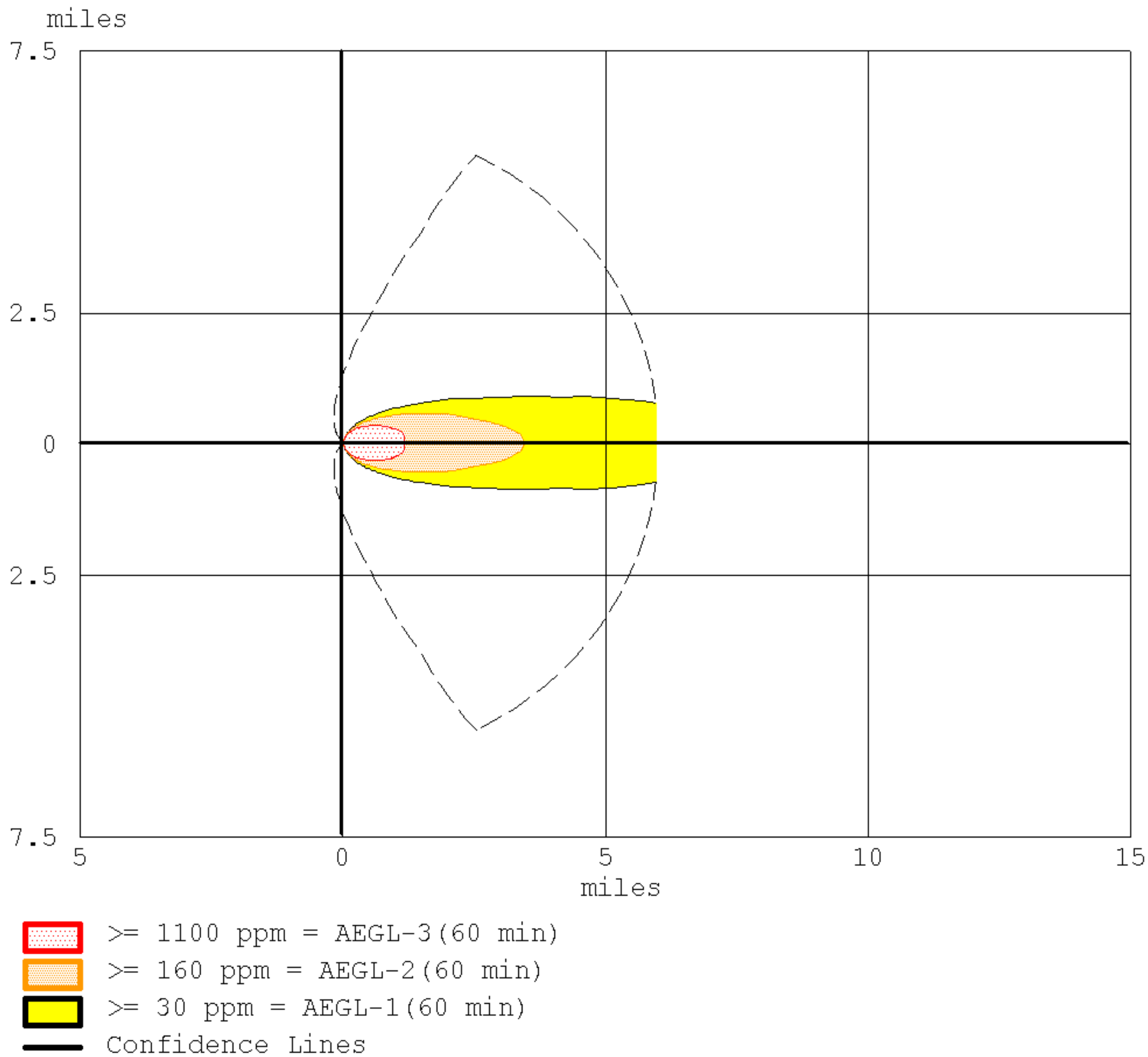
ATMOSPHERIC DATA: (MANUAL INPUT OF DATA)
Wind: 5 miles/hour from sw at 10 meters
Ground Roughness: open country Cloud Cover: 5 tenths
Air Temperature: 70° F Stability Class: B
No Inversion Height Relative Humidity: 75%

SOURCE STRENGTH:
Leak from hole in horizontal cylindrical tank
Flammable chemical escaping from tank (not burning)
Tank Diameter: 10.4 feet Tank Length: 53 feet
Tank Volume: 33,679 gallons
Tank contains liquid Internal Temperature: 70° F
Chemical Mass in Tank: 72.7 tons Tank is 85% full
Circular Opening Diameter: 2.5 inches
Opening is 12 inches from tank bottom
Release Duration: 34 minutes
Max Average Sustained Release Rate: 7,890 pounds/min
(averaged over a minute or more)
Total Amount Released: 139,584 pounds

Note: The chemical escaped as a mixture of gas and aerosol (two phase flow).

THREAT ZONE:
Model Run: Heavy Gas
Red : 1.2 miles --- (1100 ppm = AEGL-3(60 min))
Orange: 3.5 miles --- (160 ppm = AEGL-2(60 min))
Yellow: greater than 6 miles --- (30 ppm = AEGL-1(60 min))

Figure 4-13: Plume Footprint Generated by ALOHA



Acute Exposure Guideline Levels (AEGLs) are intended to describe the health effects on humans due to once-in-a-lifetime or rare exposure to airborne chemicals. The National Advisory Committee for AEGLs is developing these guidelines to help both national and local authorities, as well as private companies, deal with emergencies involving spills or other catastrophic exposures. As the substance moves away from the source, the level of substance concentration decreases. Each color-coded area depicts a level of concentration measured in parts per million (ppm). The image in Figure 4-14 depicts the plume footprint generated by ALOHA in ArcGIS.

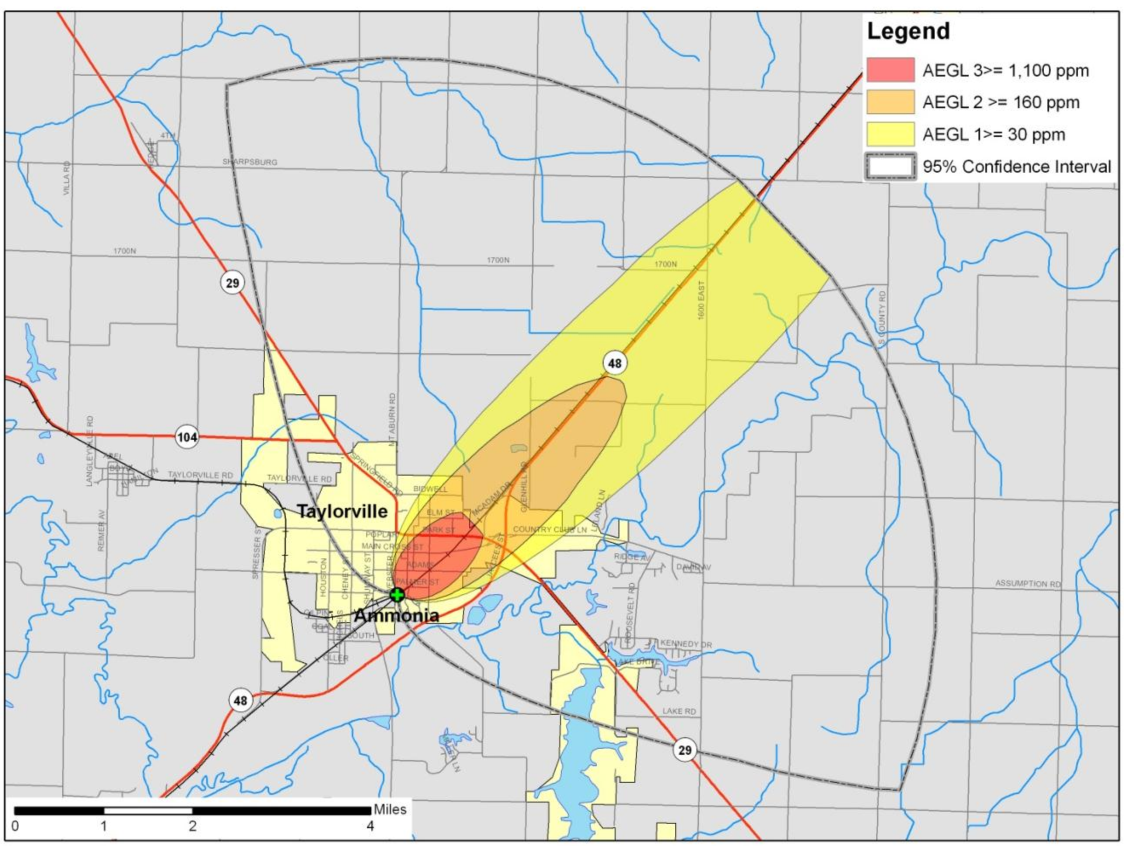
- **AEGL 3:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience life-threatening health effects or death. The red buffer (≥1100 ppm) extends no more than six miles from the point of release after one hour.

- **AEGL 2:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience irreversible or other serious, long-lasting adverse health effects or an impaired ability to escape. The orange buffer (≥160 ppm) extends no more than six miles from the point of release after one hour.

- **AEGL 1:** Above this airborne concentration of a substance, it is predicted that the general population, including susceptible individuals, could experience notable discomfort, irritation, or certain asymptomatic non-sensory effects. However, the effects are not disabling and are transient and reversible upon cessation of exposure. The yellow buffer (≥30 ppm) extends more than six miles from the point of release after one hour.

- **Confidence Lines**: The dashed lines depict the level of confidence in which the exposure level will be contained. The ALOHA model is 95% confident that the release will stay within this boundary.

Figure 4-14: ALOHA Plume Footprint Overlaid in ArcGIS

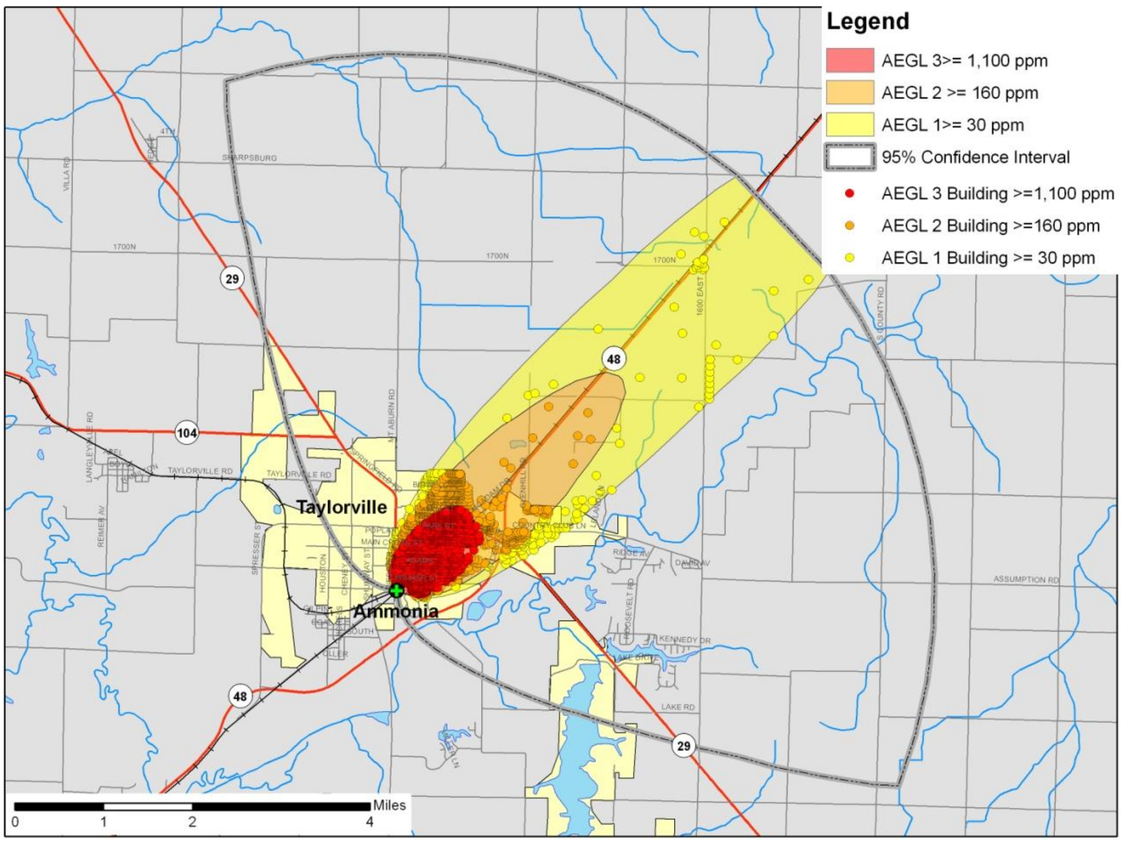


Results

By summing the building inventory within all AEGL levels (AEGL 3: ≥1,100 ppm, AEGL 2: ≥160 ppm and Level 1: ≥3 ppm.), the GIS overlay analysis predicts that as many as 1,914 buildings could be exposed at a replacement cost of $153.2 million. If this event were to occur, approximately 4,000 people would be affected. The results are depicted in Figure 4-15.

The Assessor records often do not distinguish parcels by occupancy class when the parcels are not taxable; therefore, the total number of buildings and the building replacement costs for government, religious/non-profit, and education may be underestimated.

Figure 4-15: Christian County Building Inventory Classified By Plume Footprint



Building Inventory Damage

The results of the analysis against the building inventory points are depicted in Tables 4-33 through 4-36. Table 4-33 summarizes the results of the chemical spill by combining all AEGL level. Tables 4-34 through 4-36 summarize the results of the chemical spill for each level separately.

Table 4-33: Estimated Exposure for all Level (all ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	3,990	1,596	$103,090,881
Commercial	0	203	$22,408,974
Industrial	0	5	$8,492,910
Agriculture	0	25	$1,475,622
Religious	0	73	$0
Government	0	8	$2,610,800
Education	0	13	$15,113,590
Total	**3990**	**1,923**	**$153,192,777**

Table 4-34: Estimated Exposure for Level 3 (≥1100 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	2,205	882	$50,894,112
Commercial	0	131	$10,095,246
Industrial	0	1	$811,059
Agriculture	0	0	$0
Religious	0	38	$0
Government	0	1	$2,300,000
Education	0	2	$7,923,000
Total	**205**	**1,055**	**$72,023,417**

Table 4-35: Estimated Exposure for Level 2 (≥160 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	1,440	576	$36,508,917
Commercial	0	53	$7,611,759
Industrial	0	4	$7,681,851
Agriculture	0	4	$114,360
Religious	0	21	$0
Government	0	2	$310,800
Education	0	2	$7190590
Total	**1440**	**662**	$59,418,277

Table 4-36: Estimated Exposure for Level 1 (≥30 ppm)

Occupancy	Population	Building Counts	Building Exposure
Residential	345	138	$15,687,852
Commercial	0	19	$4,701,969
Industrial	0	0	$0
Agriculture	0	21	$1,361,262
Religious	0	14	$0
Government	0	4	$0
Education	0	0	$0
Total	**345**	**196**	**$21,751,083**

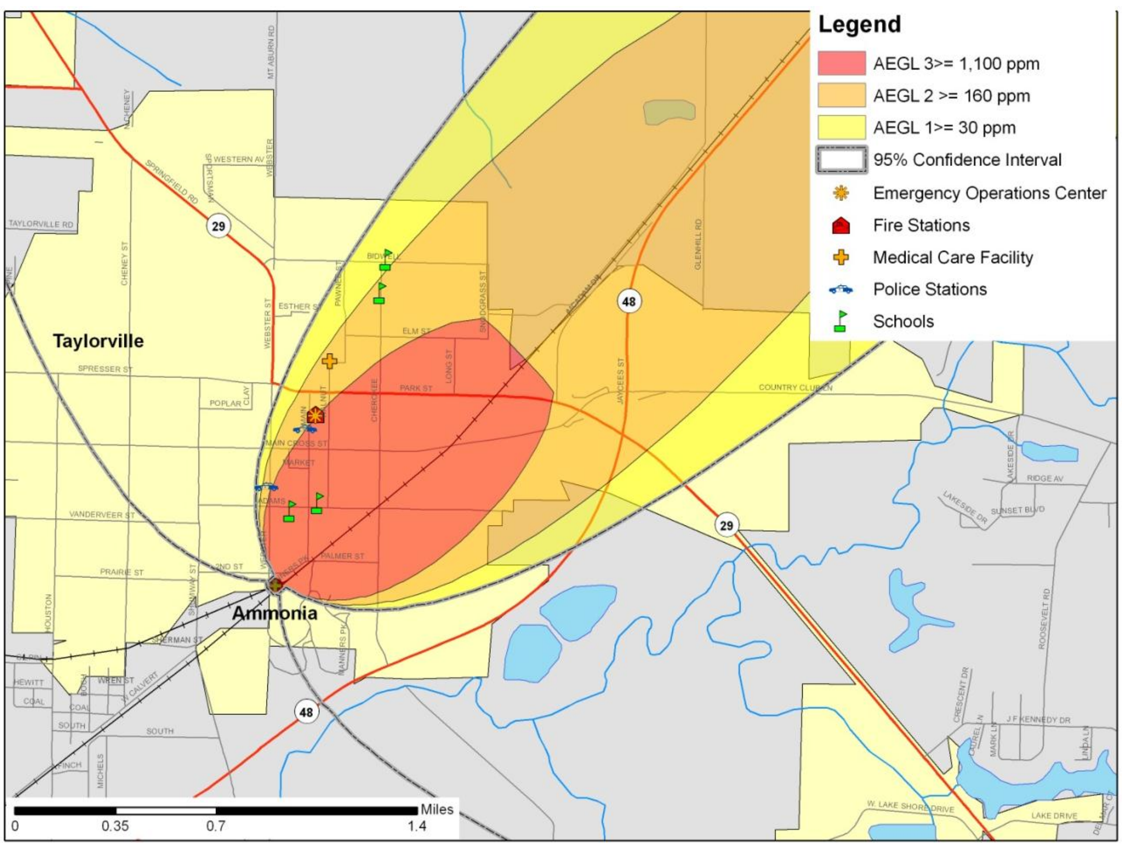
Critical Facilities Damage

There are nine critical facilities within the limits of the chemical spill plume. The affected facilities are identified in Table 4-37. Their geographic locations are depicted in Figure 4-16.

Table 4-37: Essential Facilities within Plume Footprint

Name
Emergency Operations Center
Taylorville Emergency Operations Center
Fire Stations
Taylorville Fire Department
Medical Care Facilities
St. Vincent Memorial Hospital
Police Departments
Christian County Sheriff
Taylorville Police Department
Schools
St. Mary School
Memorial Elementary Schools
North Elementary Schools
Central School

Figure 4-16: Essential Facilities within Plume Footprint



Vulnerability to Future Assets/Infrastructure for Hazardous Materials Storage and Transport Hazard

Any new development within the county will be vulnerable to these events, especially development along major roadways.

Analysis of Community Development Trends

Because the hazardous material hazard events may occur anywhere within the county, future development will be impacted. The major transportation routes and the industries located in Christian County pose a threat of dangerous chemicals and hazardous materials release.

4.4.8 Fire Hazard

Hazard Definition for Fire Hazard

This plan will address three major categories of fires for Christian County: 1) tire/scrap fires; 2) structural fires; and 3) wildfires.

Tire Fires

The state of Illinois generates thousands of scrap tires annually. Many of those scrap tires end up in approved storage sites that are carefully regulated and controlled by federal and state officials. However, scrap tires are sometimes intentionally dumped in unapproved locations throughout the state. The number of unapproved locations cannot be readily determined. These illegal sites are owned by private residents who have been continually dumping waste and refuse, including scrap tires, at those locations for many years.

Tire disposal sites can be fire hazards, in large part, because of the enormous number of scrap tires typically present at one site. This large amount of fuel renders standard firefighting practices nearly useless. Flowing and burning oil released by the scrap tires can spread the fire to adjacent areas. Tire fires differ from conventional fires in the following ways:

- Relatively small tire fires can require significant fire resources to control and extinguish.
- Those resources often cost much more than Christian County government can absorb compared to standard fire responses.
- There may be significant environmental consequences of a major tire fire. Extreme heat can convert a standard vehicle tire into approximately two gallons of oily residue that may leak into the soil or migrate to streams and waterways.

Structural Fires

Lightning strikes, poor building construction, and building condition are the main causes for most structural fires in Illinois. Christian County has a few structural fires each year countywide.

Wildfires

When hot and dry conditions develop, forests may become vulnerable to devastating wildfires. In the past few decades an increased commercial and residential development near forested areas has dramatically changed the nature and scope of the wildfire hazard. In addition, the increase in structures resulting from new development strains the effectiveness of the fire service personnel in the county.

Previous Occurrences for Fire Hazard

Christian County has not experienced a significant or large-scale explosion at a fixed site or transportation route that has resulted in multiple deaths or serious injuries.

Geographic Location for Fire Hazard

Fire hazards occur countywide and therefore affect the entire county. The forested areas in the county have a higher chance of widespread fire hazard.

Hazard Extent for Fire Hazard

The extent of the fire hazard varies both in terms of the severity of the fire and the type of material being ignited. All communities in Christian County are affected by fire equally.

Risk Identification for Fire Hazard

Based on input from the planning team, the occurrence of a fire is likely. According to the RPI, fire/explosion is ranked as the number seven hazard.

RPI = Probability x Magnitude/Severity.

Probability	x	Magnitude /Severity	=	RPI
3	x	1	=	3

Vulnerability Analysis for Fire Hazard

This hazard impacts the entire jurisdiction equally; therefore, the entire population and all buildings within the county are vulnerable to fires and can expect the same impacts within the affected area.

Table 4-9 lists the types and numbers of all essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

The building exposure for Christian County, as determined from the building inventory, is included in Table 4-10. Because of the difficulty predicting which communities are at risk, the entire population and all buildings have been identified at risk.

Critical Facilities

All critical facilities are vulnerable to fire hazards. A critical facility will encounter many of the same impacts as any other building within the jurisdiction. These impacts include structural damage from fire and water damage from efforts extinguishing fire. Table 4-9 lists the types and numbers of essential facilities in the area. A map and list of all critical facilities is included as Appendix F.

Building Inventory

A table of the building exposure in terms of types and numbers of buildings for the entire county is provided in Table 4-10. Impacts to the general buildings within the county are similar to the damages expected to the critical facilities. These impacts include structural damage from fire and water damage from efforts to extinguish the fire.

Infrastructure

During a fire the types of infrastructure that could be impacted include roadways, utility lines/pipes, railroads, and bridges. Since the county's entire infrastructure is equally vulnerable, it is important to emphasize that any number of these items could become damaged during a fire. Potential impacts include structural damage resulting in impassable roadways and power outages.

Vulnerability to Future Assets/Infrastructure for Fire Hazard

Any future development will be vulnerable to these events.

Analysis of Community Development Trends

Fire hazard events may occur anywhere within the county, because of this future development will be impacted.

4.4.9 Ground Failure Hazard

Subsidence

Subsidence in Illinois is a sinking of the land surface, usually associated with either underground mining or collapse of soil into crevices in underling soluble bedrock. Areas at risk for subsidence can be determined from detailed mapping of geologic conditions or detailed mine maps. Data sources were compiled from the Illinois Geologic Survey and Illinois Department of Natural Resources to assess the risk of subsidence in Christian County. This section provides an overview of the subsidence hazards in Illinois in general and a discussion of the potential subsidence risk for Christian County.

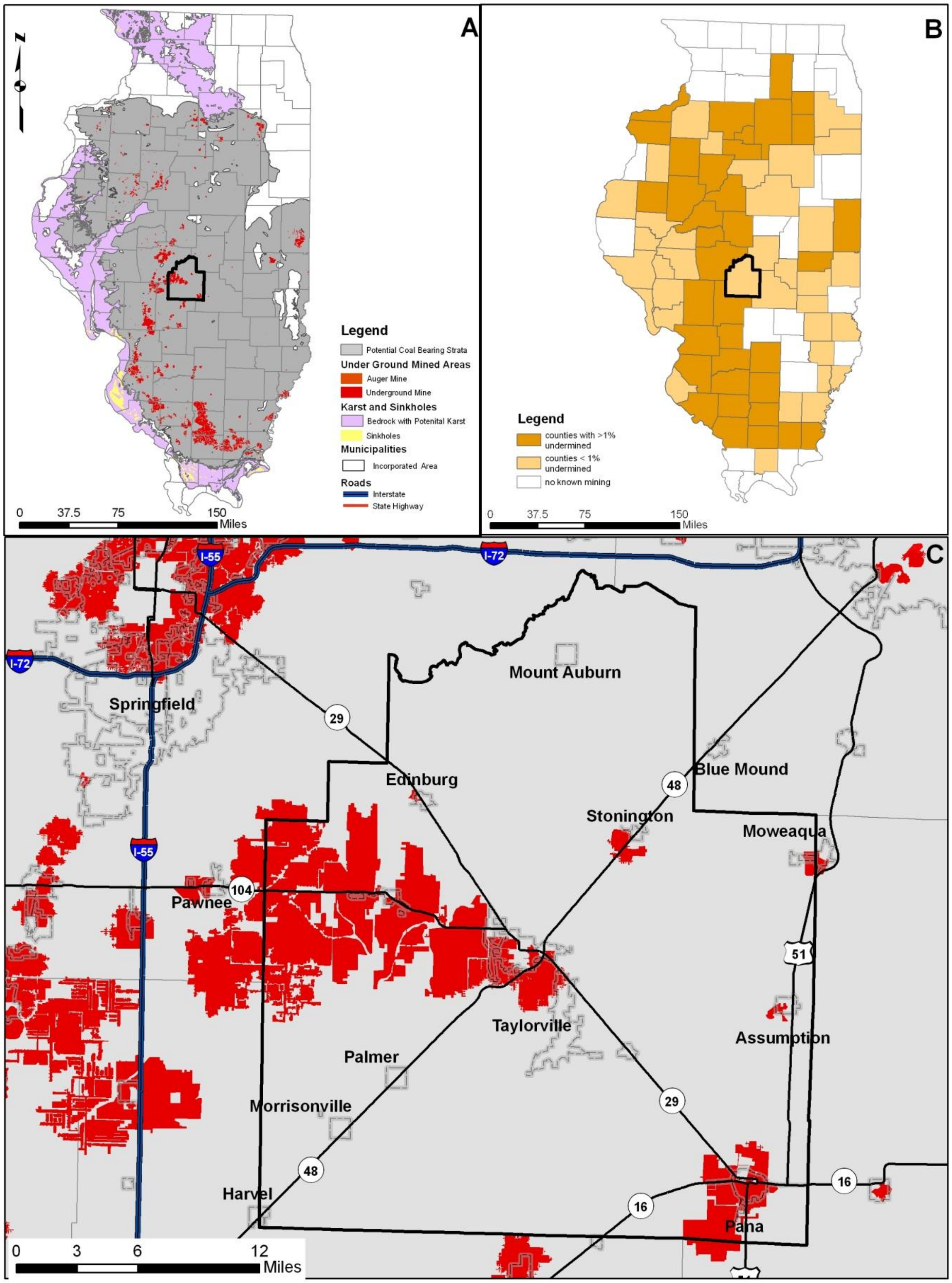
Underground Mining and Subsidence

Underground mines have been used extensively in Illinois to extract coal, lead, zinc, fluorites, shale, clay stones, limestone, and dolomite. When mining first began in Illinois, land over mined areas was sparsely populated. If the ground subsided, homes or other structures were seldom damaged. As towns and cities expanded over mined-out areas, subsidence damage to structures became increasingly more common. The most common underground mines in Illinois are coal mines. A recent study in Illinois has found that approximately 333,100 housing units were located over or adjacent to 839,000 acres mined for coal (Bauer, 2008).

Illinois has abundant coal resources. All or parts of 86 of 102 counties in the state have coal-bearing strata. As of 2007, approximately 1,050,400 acres (2.8% of the state) were mined. Of that total, 836,655 acres are underground mines (Bauer, 2008). Illinois ranks first among all U.S. states for reserves of bituminous coal (Illinois Coal Association, 1992).

Figure 4-17a shows the statewide distribution of bedrock with karst potential, coal bearing strata, sink holes, and underground mines. Figure 4-17b shows the counties which are 0, < 1%, and >1% undermined; Figure 4-17c shows the countywide distribution of bedrock with karst potential, coal bearing strata, sink holes, and underground mines.

Figures 4-17a b and c: Maps of Statewide and Countywide Areas with Subsidence Hazard Potential



Mining Methods

There are two fundamental underground mining methods used in Illinois: high-extraction methods, such as long-wall and low-extraction room, and pillar mining. High-extraction methods remove almost all of the coal in localized areas. For modern mining practices, subsidence associated with high-extraction methods is planned and regulated by state and federal authorities. The subsurface subsides above the mine within several days or weeks after the coal has been removed. Subsidence of the overburden above the mined-out area can continue up to seven years after subsurface removal, depending on the local geologic conditions (Bauer, 2008). The initial ground movements associated with this mining, which tend to be the largest, diminish rapidly after a few months. After subsidence has decreased to a level that no longer causes damage to structures, the land may be suitable for development. The maximum amount of subsidence is proportional to the amount of material extract and the depth between the mining and the surface. In general, over the centerline of the mine panel, subsidence can be 60% to 70% of the extract material (e.g., 10 ft of material extracted would cause a maximum subsidence of six to seven feet; Bauer, 2006).

For low-extraction techniques such as room-and-pillar mining, miners create openings (rooms) as they work. Enough of the coal layer is left behind in the pillars to support the ground surface. In Illinois, this system of mining extracts 40% to 55% of the coal resources in modern mines and up to 75% is some older mines. Based on current state regulations, room-and-pillar mines in operation after 1983 that do not include planned subsidence must show that they have a stable design. Although these permitting requirements have improved overall mine stability, there are no guarantees that subsidence will not occur above a room-and-pillar mine in the future. In general, if coal or other mined resources has been removed from an area, subsidence of the overlying material is always a possibility (Bauer, 2006).

Types of Mine Subsidence

In Illinois, subsidence of the land surface related to underground mining undertakes two forms: pit subsidence or trough (sag) subsidence. Pit subsidence structures are generally six to eight feet deep and range from two to 40 feet in diameter. Pit subsidence mostly occurs over shallow mines that are <100 feet deep where the overlying bedrock is <50 feet thick and composed of weak rock materials, such as shale. The pit is produced when the mine roof collapses and the roof fall void works its way to the surface. These structures form rapidly. If the bedrock is only a few feet thick and the surface materials are unconsolidated (loose), these materials may fall into adjacent mine voids, producing a surface hole deeper than the height of the collapse mine void. Pit subsidence can cause damage to a structure if it develops under the corner of a building, under a support post of a foundation, or in another critical location. Subsidence pits should be filled to ensure that people or animals do not fall into these structures (Bauer, 2006).

Trough subsidence forms a gentle depression over a broad area. Some trough subsidence may be as large as a whole mine panel (i.e. several hundred feet long and a few hundred feet wide). Several acres of land may be affected by a single trough event or feature. As previously discussed, the maximum vertical settlement is 60% to 70% of the height of material removed (e.g., two to six feet). Significant troughs may develop suddenly, within a few hours or days, or gradually over a period of years. Troughs originate over places in mines where pillars have collapsed, producing downward movement at the ground surface. These failures can develop over mines of any depth. Trough subsidence produces an orderly pattern of tensile features (tension cracks) surrounding a central area of possible compression features. The type and extent of damage to surface structures relates to their orientation and position within a trough. In the tension zone, the downward-bending movements that develop in the ground may damage buildings, roads, sewer and water pipes, and other utilities. The downward bending of the ground surface causes the soil to crack, forming the tension cracks that pull structures apart. In the relatively smaller compression zone, roads may buckle and foundation walls may be pushed inward. Buildings damaged by compressional forces typically need their foundations rebuilt and may also need to be leveled due to differential settling (Bauer, 2006).

Mine Subsidence Insurance

The Mine Subsidence Insurance, as of 1979, created subsidence insurance as part of an Illinois homeowner's policy. Homeowners in any of the Illinois counties undermined by approximately 1% or more automatically have mine subsidence insurance as a part of their policy, unless coverage is waived in writing. Mine subsidence insurance is especially important for homes located near or over mines that operated before the 1977 Surface Mine Control and Reclamation Act. The companies that operated these mines may no longer be in business (Bauer, 2006).

Mine Subsidence in Christian County

All of Christian County is underlain by rock units which potentially contain coal. Analysis of the GIS data layer of active and abandoned coal mines in Illinois obtained from the Illinois Department of Natural Resources (ILDNR) revealed that 85.4 mi^2 out of Christian County's total 715.4 mi^2 (~ 12%) area have been undermined. The undermined areas are located along State Route 104 between Taylorville and the Christian County Line and in the vicinity of Assumption, Edinburg, Pana, Moweaqua, and Stonington. Comparison of the GIS layer of parcels with structures attained from Christian County with IDNR GIS layer of active and abandoned underground-coal mines was performed. This analysis revealed that 6,748 out of the 16,222 or ~42% of the buildings in the county were above undermined areas. The 6,748 structures located above underground mines have an estimate value of $403 million.

Subsidence Related to Karst Features

Subsidence can also occur on land located over soluble bedrock. The land over such bedrock often has topography characteristics of past subsidence events. This topography is termed "karst." Karst terrain has unique landforms and hydrology found only in these areas. Bedrock in karst areas are typically limestone, dolomite, or gypsum. In Illinois, limestone and dolomite (carbonate rocks) are the principle karst rock types; 9% of Illinois has carbonate rock types close enough to the ground surface to have a well-developed karst terrain. The area in Illinois in which the karst terrain is most developed is the southern and southwestern part of the state (Panno, et al., 1997).

Sinkhole Formation

The karst feature most associated with subsidence is the sinkhole. A sinkhole is an area of ground with no natural external surface drainage—when it rains, all of the water stays inside the sinkhole and typically drains into the subsurface. Sinkholes can vary from a few feet to hundreds of acres, and from less than one to more than 100 feet deep. Typically, sinkholes form slowly, so that little change is seen during a lifetime, but they also can form suddenly when a collapse occurs. Such a collapse can have a dramatic effect if it occurs in a populated setting.

Sinkholes form where rainwater moves through the soil and encounters soluble bedrock. The bedrock begins to dissolve along horizontal and vertical cracks and joints in the rock. Eventually, these cracks become large enough to start transporting small soil particles. As these small particles of soil are carried off, the surface of the soil above the conduit slump down gradually, and a small depression forms on the ground surface. This depression acts like a funnel and gathers more water, which makes the conduit still larger and washes more soil into it.

Sinkhole Collapse

Sudden collapse of a sinkhole occurs when the soil close to the ground surface does not initially slump down, but instead forms a bridge. Beneath that surface cover, a void forms where the soil continues to wash into the conduit. These voids are essentially shallow caves. Over time, the void enlarges enough that the weight of the overlying bridge can no longer be supported. The surface layer then suddenly collapses into the void, forming a sinkhole.

The process of forming a conduit and a soil bridge usually takes years to decades to form. However this natural process can be aggravated and expedited by human activates. Since the process of forming a sinkhole depends on water to carry soil particle down into the karst bedrock, anything that increases the amount of water flowing into the subsurface can accelerate sinkhole formation process. Parking lots, streets, altered drainage from construction, and roof drainage are a few of the things that can increase runoff.

Collapses are more frequent after intense rainstorms. However, drought and altering of the water table can also contribute to sinkhole collapse. Areas where the water table fluctuates or has suddenly been lowered are more susceptible to sinkhole collapse. It is also possible for construction activity to induce the collapse of near-surface voids or caves. In areas of karst bedrock, it is imperative that a proper geotechnical assessment be completed prior to construction of any significant structures. Solutions to foundation problems in karst terrain generally are expensive (White, 1988).

Sinkhole Subsidence or Collapse Potential for Christian County

Nearly all of Christian County is underlain by insoluble bedrock, and therefore subsidence related to karst bedrock should not be a concern.

Hazard Extent for Subsidence

The extent of subsidence hazard in Christian County is a function of where current development is located relative to areas of past and present underground mining and the occurrence of near-surface soluble bedrock.

Calculated Risk Priority Index for Ground Failure

Based on historical, geological, mine information, future ground failure in undermined regions of Christian County is possible. According to the RPI, ground failure ranked as the number three hazard in the county.

RPI = Probability x Magnitude/Severity.

Probability	X	Magnitude /Severity	=	RPI
3	X	1	=	3

Vulnerability Analysis for Ground Failure

The existing buildings and infrastructure of Christian County are discussed in types and numbers in Table 4-9.

Vulnerability Analysis for Ground Failure

The existing buildings and infrastructure of Christian County are discussed in types and numbers in Table 4-9.

Critical Facilities

Any critical facility built above highly soluble bedrock or an underground mine could be vulnerable to land subsidence. A critical facility will encounter the same impacts as any other building within the affected area. These impacts include damages ranging from cosmetic to structural. Buildings may sustain minor cracks in walls due to a small amount of settling, while in more severe cases, the failure of building foundations can cause cracking of critical structural elements. Table 4-9 lists the essential facilities in the area. Critical facility information, including replacement costs, is included in Appendix F. A map of the critical facilities is included in Appendix G.

Building Inventory

Table 4-10 lists the building exposure in terms of types and numbers of buildings for the entire county. The buildings within this area can anticipate impacts similar to those discussed for critical facilities, ranging from cosmetic to structural. Buildings may sustain minor cracks in walls due to a small amount of settling, while in more severe cases, the failure of building foundations causes cracking of critical structural elements.

Infrastructure

Ground subsidence areas within Christian County could impact the roadways, utility lines/pipes, railroads, and bridges. The risk to these structures is primarily associated with land collapsing directly beneath them in a way that undermines their structural integrity. The impacts to these items include broken, failed, or impassable roadways; broken or failed utility lines (e.g. loss of power or gas to community); and railway failure from broken or impassable railways. In addition bridges could fail or become impassable causing risk to traffic.

Vulnerability to Future Assets/Infrastructure for Ground Failure

New buildings and infrastructure placed on undermined land or on highly soluble bedrock will be vulnerable to ground failure.

Analysis of Community Development Trends

Abandoned underground mine subsidence may affect several locations within the county; therefore buildings and infrastructure are vulnerable to subsidence. Continued development will occur in many of these areas. Currently, Christian County reviews new development for compliance with the local zoning ordinance. Newly planned construction should be reviewed with the historical mining maps to minimize potential subsidence structural damage.

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Section 5 - Mitigation Strategy

The goal of mitigation is to reduce the future impacts of a hazard including property damage, disruption to local and regional economies, and the amount of public and private funds spent to assist with recovery. The goal of mitigation is to build disaster-resistant communities. Mitigation actions and projects should be based on a well-constructed risk assessment, provided in Section 4 of this plan. Mitigation should be an ongoing process adapting over time to accommodate a community's needs.

5.1 Community Capability Assessment

The capability assessment identifies current activities used to mitigate hazards. The capability assessment identifies the policies, regulations, procedures, programs, and projects that contribute to the lessening of disaster damages. The assessment also provides an evaluation of these capabilities to determine whether the activities can be improved in order to more effectively reduce the impact of future hazards. The following sections identify existing plans and mitigation capabilities within all of the communities listed in Section 2 of this plan.

5.1.1 National Flood Insurance Program (NFIP)

Christian County, City of Taylorville, the Village of Edinburg, the Village of Kincaid, and the Village of Stonington are members of the NFIP. The Village of Assumption, the City of Pana, the Village of Jeisyville, Village of Morrisonville, the Village of Mount Auburn, and the Village of Owaneco do not have an identified flood hazard boundaries, and therefore these jurisdictions chooses not to participate in the program. The villages of Palmer, Moweaqua and Tovey do have identified flood hazard areas but they have chosen not to participate due to lack of interest or perceived need. Christian County will continue to educate these jurisdictions on the benefits of the program.

HAZUS-MH identified approximately 438 households located within the Christian County Special Flood Hazard Area; 29 households paid flood insurance, insuring $2,014,500 in property value. The total premiums collected amounted to $11,128 which on average was $383.7 annually. From 1978 through 2007, 11 claims were filed totaling $89,033. The average claim was $8,094.

The county and incorporated areas do not participate in the NFIP'S Community Rating System (CRS). The CRS is a voluntary incentive program that recognizes and encourages community floodplain management activities that exceed the minimum NFIP requirements. As a result, flood insurance premium rates are discounted to reflect the reduced flood risk resulting from the community actions meeting the three goals of the CRS: 1) reduce flood losses; 2) facilitate accurate insurance rating; and 3) promote the awareness of flood insurance.

Table 5-1 identifies each community and the date each participant joined the NFIP.

Table 5-1: Additional Information on Communities Participating in the NFIP

Community	Participation Date	FIRM Date	CRS Date	CRS Rating	Floodplain Ordinance
Christian County	5/27/1993	4/7/1977	N/A	N/A	5/27/1993
City of Taylorville	9/18/1985	9/18/1985	N/A	N/A	9/18/1985
City of Pana	Does not participate	N/A	N/A	N/A	N/A
Village of Assumption	Does not participate	N/A	N/A	N/A	N/A
Village of Edinburg	07/03/2003	No SFHA	N/A	N/A	07/03/2003
Village of Jeisyville	Does not participate	N/A	N/A	N/A	N/A
Village of Kincaid	4/1/1993	4/1/1993	N/A	N/A	4/1/1993
Village of Morrisonville	Does not participate	N/A	N/A	N/A	N/A
Village of Mount Auburn	Does not participate	N/A	N/A	N/A	N/A
Village Moweaqua	Does not participate	N/A	N/A	N/A	N/A
Village of Owaneco	Does not participate	N/A	N/A	N/A	N/A
Village of Palmer	Does not participate	N/A	N/A	N/A	N/A
Village of Stonington	9/28/1979	9/28/1979	N/A	N/A	9/28/1979
Village of Tovey	Does not participate	N/A	N/A	N/A	N/A

5.1.2 Stormwater Management Stream Maintenance Ordinance

Christian County does not have a Stormwater Management Stream Maintenance Ordinance. The City of Pana addresses stormwater management within their "Buildings and Building Regulations" Code. All development projects must provide the city with a report on how runoff would react to the development and how that excess water would be managed. However, there are no regulations or guidelines within the county to manage stormwater.

5.1.3 Zoning Management Ordinance

Christian County does have zoning code which applies to all of Christian County except for those municipalities which have a zoning ordinance (e.g. cities of Taylorville and Pana). The county regulates all aspects of zoning including types of land use, building regulations, and procedures for construction approval. Table 5-2 lists the adoption dates of plans and ordinances within the county.

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Table 5-2: Description of Zoning Plans/Ordinances

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg. Stndrds
Christian County	6-17-2008	6-17-2008	5-10-1977	N/A	N/A	N/A	N/A	IBC
City of Taylorville	12-2006	7-16--2007	11-15-2004	N/A	N/A	12-20-2004	N/A	IBC

Community	Comp Plan	Zoning Ord	Subd Control Ord	Erosion Control	Storm Water Mgmt	Burning Ord	Seismic Ord	Bldg. Stndrds
City of Pana	10-27-1980	8-25-2009	7-26-1988	N/A	10-27-1980*	11-14-1994*	N/A	IBC
Village of Assumption	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Bulpitt	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Edinburg	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Jeisyville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Kincaid	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Morrisonville	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Mount Auburn	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village Moweaqua	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Owaneco	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Palmer	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Stonington	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Village of Tovey	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*The date given is the most recent updated version of that ordinance. *These ordinances are addressed within another ordinance for each jurisdiction.*

5.1.4 Erosion Management Program/ Policy

No jurisdiction within Christian County has an erosion management program.

5.1.5 Fire Insurance Rating Programs/ Policy

Table 5-3 lists Christian County's fire departments and respective information.

Table 5-3: Christian County Fire Departments, Ratings, and Number of Firefighters

Fire Department	Fire Insurance Rating	Number of Firefighters
Assumption Community Fire Protection District		25
Edinburg Fire Protection District		20
Midland Fire Protection District		16
Morrisonville - Palmer Fire Protection District		22
Mt. Auburn Fire Protection District		23
Owaneco Fire Protection District		16
Pana Fire Department		26
Stonington Fire Protection District	7	21
Taylorville Fire Department	6	34

5.1.6 Land Use Plan

The land use plan for Taylorville serves as a guide to zoning regulations and changes that may need to be made. It is also used to assist in the subdividing of land as well as the acquisition of land for public uses.

5.1.7 Building Codes

Christian County, the City of Taylorville, and the City of Pana uses the International Building Code (IBC) created by the International Code Council (ICC) as their guide for building standards.

5.2 Mitigation goals

In Section 4 of this plan, the risk assessment identified Christian County as prone to ten hazards. The MHMP planning team members understand that although hazards cannot be eliminated altogether, Christian County can work toward building disaster-resistant communities. Following are a list of goals, objectives, and actions. The goals represent long-term, broad visions of the overall vision the county would like to achieve for mitigation. The objectives are strategies and steps that will assist the communities in attaining the listed goals.

Goal 1: Lessen the impacts of hazards to new and existing infrastructure

(a) Objective: Retrofit critical facilities and structures with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.

(b) Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.

(c) Objective: Minimize the amount of infrastructure exposed to hazards.

(d) Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the community.

(e) Objective: Improve emergency sheltering in the community.

Goal 2: Create new or revise existing plans/maps for the community

(a) Objective: Support compliance with the NFIP.

(b) Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.

(c) Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.

Goal 3: Develop long-term strategies to educate community residents on the hazards affecting their county

(a) Objective: Raise public awareness on hazard mitigation.

(b) Objective: Improve education and training of emergency personnel and public officials.

5.3 Mitigation Actions/Projects

Upon completion of the risk assessment and development of the goals and objectives, the planning committee was provided a list of the six mitigation measure categories from the *FEMA State and Local Mitigation Planning How to Guides*. The measures are listed as follows:

- **Prevention:** Government, administrative, or regulatory actions or processes that influence the way land and buildings are developed and built. These actions also include public activities to reduce hazard losses. Examples include planning and zoning, building codes, capital improvement programs, open space preservation, and stormwater management regulations.

- **Property Protection:** Actions that involve the modification of existing buildings or structures to protect them from a hazard or removal from the hazard area. Examples include acquisition, elevation, structural retrofits, storm shutters, and shatter-resistant glass.

- **Public Education and Awareness:** Actions to inform and educate citizens, elected officials, and property owners about the hazards and potential ways to mitigate them. Such actions include outreach projects, real estate disclosure, hazard information centers, and school-age and adult education programs.

- **Natural Resource Protection:** Actions that, in addition to minimizing hazard losses, preserve or restore the functions of natural systems. These actions include sediment and erosion control, stream corridor restoration, watershed management, forest and vegetation management, and wetland restoration and preservation.

- **Emergency Services:** Actions that protect people and property during and immediately after a disaster or hazard event. Services include warning systems, emergency response services, and protection of critical facilities.

- **Structural Projects:** Actions that involve the construction of structures to reduce the impact of a hazard. Such structures include dams, levees, floodwalls, seawalls, retaining walls, and safe rooms.

After Meeting #3, held February 24, 2010, MHMP members were presented with the task of individually listing potential mitigation activities using the FEMA evaluation criteria. The MHMP members brought their mitigation ideas to Meeting #4 which was held July 13, 2010. The evaluation criteria (STAPLE+E) involved the following categories and questions.

Social:
- Will the proposed action adversely affect one segment of the population?
- Will the action disrupt established neighborhoods, break up voting districts, or cause the relocation of lower income people?

Technical:
- How effective is the action in avoiding or reducing future losses?
- Will it create more problems than it solves?
- Does it solve the problem or only a symptom?
- Does the mitigation strategy address continued compliance with the NFIP?

Administrative:
- Does the jurisdiction have the capability (staff, technical experts, and/or funding) to implement the action, or can it be readily obtained?
- Can the community provide the necessary maintenance?
- Can it be accomplished in a timely manner?

Political:
- Is there political support to implement and maintain this action?
- Is there a local champion willing to help see the action to completion?
- Is there enough public support to ensure the success of the action?
- How can the mitigation objectives be accomplished at the lowest cost to the public?

Legal:
- Does the community have the authority to implement the proposed action?
- Are the proper laws, ordinances, and resolution in place to implement the action?
- Are there any potential legal consequences?
- Is there any potential community liability?
- Is the action likely to be challenged by those who may be negatively affected?
- Does the mitigation strategy address continued compliance with the NFIP?

Economic:
- Are there currently sources of funds that can be used to implement the action?
- What benefits will the action provide?
- Does the cost seem reasonable for the size of the problem and likely benefits?
- What burden will be placed on the tax base or local economy to implement this action?
- Does the action contribute to other community economic goals such as capital improvements or economic development?
- What proposed actions should be considered but be “tabled” for implementation until outside sources of funding are available?

Environmental:
- How will this action affect the environment (land, water, endangered species)?
- Will this action comply with local, state, and federal environmental laws and regulations?
- Is the action consistent with community environmental goals?

5.4 Implementation Strategy and Analysis of Mitigation Projects

Implementation of the mitigation plan is critical to the overall success of the mitigation planning process. The first step is to decide, based upon many factors, which action will be undertaken first. In order to pursue the top priority first, an analysis and prioritization of the actions is important. Some actions may occur before the top priority due to financial, engineering, environmental, permitting, and site control issues. Public awareness and input of these mitigation actions can increase knowledge to capitalize on funding opportunities and monitoring the progress of an action.

In Meeting #4, the planning team prioritized mitigation actions based on a number of factors. A rating of high, medium, or low was assessed for each mitigation item and is listed next to each item in Table 5-5. The factors were the STAPLE+E (Social, Technical, Administrative, Political, Legal, Economic, and Environmental) criteria listed in Table 5-4.

Table 5-4: STAPLE+E planning factors

S – Social	Mitigation actions are acceptable to the community if they do not adversely affect a particular segment of the population, do not cause relocation of lower income people, and if they are compatible with the community's social and cultural values.
T – Technical	Mitigation actions are technically most effective if they provide a long-term reduction of losses and have minimal secondary adverse impacts.
A – Administrative	Mitigation actions are easier to implement if the jurisdiction has the necessary staffing and funding.
P – Political	Mitigation actions can truly be successful if all stakeholders have been offered an opportunity to participate in the planning process and if there is public support for the action.
L – Legal	It is critical that the jurisdiction or implementing agency have the legal authority to implement and enforce a mitigation action.
E – Economic	Budget constraints can significantly deter the implementation of mitigation actions. Hence, it is important to evaluate whether an action is cost-effective, as determined by a cost benefit review, and possible to fund.
E – Environmental	Sustainable mitigation actions that do not have an adverse effect on the environment, comply with federal, state, and local environmental regulations, and are consistent with the community's environmental goals, have mitigation benefits while being environmentally sound.

For each mitigation action related to infrastructure, new and existing infrastructure was considered. Additionally, the mitigation strategies address continued compliance with the NFIP. While an official cost benefit review was not conducted for any of the mitigation actions, the estimated costs were discussed. The overall benefits were considered when prioritizing mitigation items from high to low. An official cost benefit review will be conducted prior to the implementations of any mitigation actions. Table 5-5 presents mitigation projects developed by the planning committee, as well as actions that are ongoing or already completed. Since this is the first mitigation plan developed for Christian County, there are no deleted or deferred mitigation items.

Table 5-5: Mitigation Strategies

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Establish cooling centers	Goal: Lessen the impacts of severe weather to at-risk individuals Objective: Improve emergency sheltering in the community.	Extreme Heat/ Drought	Christian County	Complete	The County has a number of established cooling centers. More may be required in the future.
Conduct a commodity flow study	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Hazmat	Christian County	Complete	The County recently completed a commodity flow study.
Distribute weather radios to critical facilities	Goal: Improve emergency communication with Public Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Tornado, Thunderstorm, Flood, Earthquake, Drought, Winter Storm	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Complete	Critical facilities throughout the county are equipped with weather radios.
Establish a database to identify special needs population	Goal: Create new or revise existing plans/maps for the community Objective: Conduct new studies/research to profile hazards and follow up with mitigation strategies.	Winter Storm	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Complete	Healthcare Agencies have a database for special needs residents.
Develop a debris management plan that includes roles and responsibilities of the LEPC and other county departments	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Flood	Christian County	Ongoing	The County has a debris management plan in place; however, it may require updates. Local resources will be used to update and maintain the plan.
Develop ordinances to bury new power lines in subdivisions	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Tornado, Earthquake, Thunderstorm, Winter Storm	Christian County	Ongoing	Although there is not a formal ordinance in place, new subdivisions typically bury power lines. The county will propose development of ordinances to require this practice for all future infrastructure. Local resources will be used to develop the ordinances.
Work with local radio stations to establish a protocol for issuing weather warnings to the public	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Fire, Hazmat, Subsidence	Christian County	Ongoing	The County works with local radio stations to issue warnings to the public.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Implement Nixle for mass media release via e-mail and text messages; advertise to the public for participation	Goal: Enhance County's Emergency Notification System Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire, Subsidence	Christian County	High	The county will implement Nixle but wants to continue researching other systems for mass notification. The ESDA director will oversee this project. Funding for advertisement of the system will be sought from FEMA. If funding is available, implementation will begin within one year.
Institute Reverse 911 or similar system	Goal: Enhance County's Emergency Notification System Objective: Evaluate and strengthen the communication and transportation abilities of emergency services throughout the county.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Hazmat, Fire, Subsidence	Christian County	High	The County ESDA oversees the implementation of the project. Nixle will be implemented as an interim system. Local resources will be used to maintain the system. Funding to implement the new system will be sought from the PDM program and state and federal resources. Implementation, if funding is available, is forecasted to begin within one year.
Strengthen mutual aid response agreements	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials	Winter Storms, Hazmat	Christian County	High	The ESDA director will work with neighboring counties to establish the agreements. If resources are available, implementation will begin within one year.
Conduct a new flood study (DFIRM)	Goal: Create new or revise existing plans/maps for the community Objective: Support compliance with the NFIP for each jurisdiction.	Flood	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	High	The County Floodplain Manager will oversee this project. FEMA will be approached for funding and assistance with the study. If funding is available, implementation will begin within one year.
Harden critical facilities and older public buildings	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	High	The County Engineer will oversee the implementation of this project. Local resources will be used to identify the required structures to be hardened. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. Implementation, if funding is available, will begin within one year.
Purchase generators and/or transfer switches to provide back-up power to critical facilities and sewer systems in Kinkaid and Tovey	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	High	The County and other jurisdictions will oversee the implementation of this project. Local resources will be used to determine which facilities should receive generators. Funding has not been secured as of 2010, but the pre-disaster mitigation program and community development grants are possible funding sources. If funding is available, this project is forecasted to begin within one year.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Distribute brochures related to hazard mitigation and preparedness at public events such as the county fair	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Raise public awareness on hazard mitigation.	Tornado, Flood, Earthquake, Thunderstorm, Winter Storm, Drought, Hazmat, Fire	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	High	The County ESDA will oversee implementation of this project. Local resources, e.g. schools, healthcare facilities, and businesses, will be approached to help develop the literature. FEMA may be approached for additional funding. If resources and funding are available, implementation will begin within one year.
Establish shelters/warming centers	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Improve emergency sheltering in the community.	Tornado, Thunderstorm, Flood, Earthquake, Winter Storm, Hazmat, Subsidence, Fire	Mount Auburn, Tovey, Christian County	High	The County ESDA will work with American Red Cross to establish the new shelters. Funding will be sought from local businesses and healthcare facilities. If funding is available, implementation will begin within one year.
Increase water capacity by dredging Lake Taylorville	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Equip public facilities and communities to guard against damage caused by secondary effects of hazards.	Drought	Taylorville	High	The County Engineer will work with DNR to oversee implementation of this project. Local resources and DNR are proposed sources of funding. Implementation will begin within one year.
Establish and enforce drainage ordinances	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Flood	Christian County	Medium	The County Engineer will work with the local planning commission to establish ordinances. The MHMP planning committee will develop public education options to re-affirm the ordinances in the communities. If local, state, and federal resources are available, implementation of this project will begin within three years.
Establish ordinances to restrict development in undermined areas in the county	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Subsidence	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Medium	The County ESDA will oversee this project. The county will seek assistance from IEMA and community grants to develop the ordinances. If funding is available, implementation will begin within three years.
Conduct an engineering study to identify and map areas of subsidence	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing, or create new, community plans and ordinances to support hazard mitigation.	Subsidence	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Medium	The County Engineer will oversee this project. The county will seek assistance from IEMA and community grants to fund the study. If funding is available, implementation will begin within three years.
Conduct a study to determine shelter capacity in the county, especially mobile home parks	Goal: Lessen the impacts of disaster to at risk populations Objective: Improve emergency sheltering in the community.	Tornado, Flood, Earthquake, Thunderstorm, Drought, Winter Storm, Hazmat, Fire, Subsidence	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Medium	The ESDA director will work with local shelters to complete this project and will perhaps use HAZUS-MH. If additional shelters or supplies are needed, the PDM program or local resources are funding options. If funding is available, implementation will begin within three years.

Mitigation Item	Goals and Objects Satisfied	Hazards Addressed	Jurisdictions Covered	Priority	Comments
Repair drainage around the viaduct rail underpass	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Flood	Taylorville	Medium	The City of Taylorville will coordinate this project. Funding will be sought from DNR, FEMA, and IEMA. If funding is available, implementation will begin within three years.
Trim trees to minimize the amount/duration of power outages	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Winter Storm	Christian County	Low	The County ESDA will coordinate a team to work with utility companies to address this strategy. Funding may come from community grants or local resources. If funding and resources are available, implementation will begin within five years.
Install inertial valves at critical facilities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Retrofit critical facilities with structural design practices and equipment that will withstand natural disasters and offer weather-proofing.	Earthquake	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Low	The County ESDA will oversee implementation of this project and determine which facilities do not currently have inertial valves. Funding has not been secured as of 2010, but the PDM program and community grants are an option. If funding is available, implementation will begin within five years.
Repair culverts in all communities	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Flood	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Low	The County Engineer will oversee this project. Funding will be sought from DNR, FEMA, and IEMA. If funding is available, implementation will begin within five years.
Enforce codes requiring mobile homes to have tie-downs	Goal: Create new or revise existing plans/maps for the community Objective: Review and update existing community plans and ordinances to support hazard mitigation.	Tornado, Thunderstorm	Christian County, Taylorville, Pana, Assumption, Kincaid, Morrisonville, Mount Auburn, Owaneco, Moweaqua, Palmer, Stonington, Tovey	Low	The County ESD will coordinate this planning effort. Local resources will be used to review existing codes and research new options. Implementation will begin within five years.
Conduct a study to potentially re-engineer intersections with frequent vehicle accidents and complete pre-staged evacuation exercises	Goal: Develop long-term strategies to educate the community residents on the hazards affecting their county Objective: Improve education and training of emergency personnel and public officials	Hazmat, Fire	Taylorville	Low	The County Engineer will work with the County and State Highway Departments to implement this project. Funding for engineers will be sought from state and federal agencies and community grants. Implementation will begin within five years.
Implement natural snow fences/tree barriers	Goal: Lessen the impacts of hazards to new and existing infrastructure Objective: Minimize the amount of infrastructure exposed to hazards.	Winter Storm	Christian County	Low	The County Engineer will oversee implementation of this project. Local resources and ILDOT will be used for funding. If funding is available, implementation will begin within five years.

The Christian County Emergency Services and Disaster Agency will be the local champions for the mitigation actions. The County Commissioners and the city and village councils will be an integral part of the implementation process. Federal and state assistance will be necessary for a number of the identified actions.

5.5 Multi-Jurisdictional Mitigation Strategy

As a part of the multi-hazard mitigation planning requirements, at least two identifiable mitigation action items have been addressed for each hazard listed in the risk assessment and for each jurisdiction covered under this plan.

Each of the twelve incorporated communities within and including Christian County were invited to participate in brainstorming sessions in which goals, objectives, and strategies were discussed and prioritized. Each participant in these sessions was armed with possible mitigation goals and strategies provided by FEMA, as well as information about mitigation projects discussed in neighboring communities and counties. All potential strategies and goals that arose through this process are included in this plan. The county planning team used FEMA's evaluation criteria to gauge the priority of all items. A final draft of the disaster mitigation plan was presented to all members to allow for final edits and approval of the priorities.

Section 6 - Plan Maintenance

6.1 Monitoring, Evaluating, and Updating the Plan

Throughout the five-year planning cycle, the Christian County Emergency Management Agency will reconvene the MHMP planning committee to monitor, evaluate, and update the plan on an annual basis. Additionally, a meeting will be held during November 2015 to address the five-year update of this plan. Members of the planning committee are readily available to engage in email correspondence between annual meetings. If the need for a special meeting, due to new developments or a declared disaster occurs in the county, the team will meet to update mitigation strategies. Depending on grant opportunities and fiscal resources, mitigation projects may be implemented independently by individual communities or through local partnerships.

The committee will review the county goals and objectives to determine their relevance to changing situations in the county. In addition, state and federal policies will be reviewed to ensure they are addressing current and expected conditions. The committee will also review the risk assessment portion of the plan to determine if this information should be updated or modified. The parties responsible for the various implementation actions will report on the status of their projects, and will include which implementation processes worked well, any difficulties encountered, how coordination efforts are proceeding, and which strategies should be revised.

Updates or modifications to the MHMP during the five-year planning process will require a public notice and a meeting prior to submitting revisions to the individual jurisdictions for approval. The plan will be updated via written changes, submissions as the committee deems appropriate and necessary, and as approved by the county commissioners.

The GIS data used to prepare the plan was obtained from existing county GIS data as well as data collected as part of the planning process. This updated HAZUS-MH GIS data has been returned to the county for use and maintenance in the county's system. As newer data becomes available, this updated data will be used for future risk assessments and vulnerability analyses.

6.2 Implementation through Existing Programs

The results of this plan will be incorporated into ongoing planning efforts since many of the mitigation projects identified as part of this planning process are ongoing. Christian County and its incorporated jurisdictions will update the zoning plans and ordinances listed in Table 5-2 as necessary and as part of regularly scheduled updates. Each community will be responsible for updating its own plans and ordinances.

6.3 Continued Public Involvement

Continued public involvement is critical to the successful implementation of the MHMP. Comments from the public on the MHMP will be received by the ESDA director and forwarded to the MHMP planning committee for discussion. Education efforts for hazard mitigation will be ongoing through the ESDA. The public will be notified of periodic planning meetings through notices in the local newspaper. Once adopted, a copy of this plan will be maintained in each jurisdiction and in the County ESDA Office.

APPENDICES

Glossary of Terms

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

A

AEGL – Acute Exposure Guideline Levels
ALOHA – Areal Locations of Hazardous Atmospheres

B

BFE – Base Flood Elevation

C

CAMEO – Computer-Aided Management of Emergency Operations
CEMA – County Emergency Management Agency
CEMP – Comprehensive Emergency Management Plan
CERI – Center for Earthquake Research and Information
CRS – Community Rating System

D

DEM – Digital Elevation Model
DFIRM – Digital Flood Insurance Rate Map
DMA – Disaster Mitigation Act

E

EAP – Emergency Action Plan
ERPG – Emergency Response Planning Guidelines
EMA – Emergency Management Agency
EPA – Environmental Protection Agency

F

FEMA – Federal Emergency Management Agency
FIRM – Flood Insurance Rate Maps
FIS – Flood Information Study

G

GIS – Geographic Information System

H

HAZUS-MH – **Ha**zards **US**A **M**ulti-**H**azard
HUC – Hydrologic Unit Code

I

IDNR – Illinois Department of Natural Resources
IEMA – Illinois Emergency Management Agency
IDOT - Illinois Department of Transportation

M

MHMP – Multi-Hazard Mitigation Plan

N

NCDC – National Climatic Data Center
NEHRP – National Earthquake Hazards Reduction Program
NFIP – National Flood Insurance Program
NOAA – National Oceanic and Atmospheric Administration

P

PPM – Parts Per Million

R

RPI – Risk Priority Index

S

SPC – Storm Prediction Center
SWPPP – Storm water Pollution Prevention Plan

U

USGS – United States Geological Survey

Appendix A: Multi-Hazard Mitigation Plan Meeting Minutes

CHRISTIAN COUNTY, ILLINOIS
ILLINOIS MULTI-HAZARD MITIAGATION PLANNING (MHMP) INITIATIVE
FEBRUARY 11, 2010

The meeting was called to order by Mike Crews at 1:00 P.M. at Taylorville Memorial Hospital auditorium. Mike introduced Jonathon Remo from SIU who will serve as the lead at the Hazard Planning meeting. Those attending were: Mike Crews, Jeff Hackney, Taylorville Fire Dept.; Roger Moss, Pana Fire/EMS; Alan Hays, Village of Assumption; Marcia Rosenthal, Morrisonville EMS/ESDA; W.R. O'Connell; Lora Polley, Taylorville Memorial Hospital; Margaret M. Puccetti, Village of Tovey; Gerry Grigsby, Christian County Health Dept.; RosemaryHorsthemke, Pana Community Hospital; Linda Marsh, Pana Community Hospital; Robert Kindermann, Sheriff of Christian County; Bradley D. Sims, Pana Chief of Police; David L. Mahan, Christian County Sheriff Department; Mickie Ryan, Christian 9-1-1; Fred Ronnow, Greater Taylorville Chamber of Commerce; Gregg Fuerstenau, TCUSD #3; Clifford D. Frye, Christian County Highway: Brian Hile, Taylorville Police Department; Greg Brotherton, Mayor of Taylorville.

Presidental Disaster Declaration was January 1, 1965 thru June 1, 2003. Illinois is the county along the Mississippi river. Flooding is a significant problem.

1993-2008 State of Illinois Disaster; there were no disasters in Stark County.

U.S. Disaster costs for the following: 1980 thru 1989 was 3.9 billion dollars

1990 thru 1999 was 25.4 billion dollars

2000 thru 2010 was undermined amount of money. The staggering increases in costs leads to the disaster mitigations act of 2000. The disaster mitigation act of 2000 requires communities to develop and maintain a risk management plan in order to be eligible for federal disaster funds.

The community meeting #1 Kickoff 02/11/10

PRIOR TO MEETING: Identifying and formalize planning teams; obtain GIS and assessor data for HAZUS; prepare mutual critical facilities data.

DURING THE MEETING; Discuss and plan for public participation; review initial critical facilities data.

HOMEWORK; Collect critical facilities corrections and update; prepare community profile; collect hazard existing information; update your critical facilities; compile all information

There is no out of pocket money required.

COMMUNITY MEETING #2 HAZARDS;

PRIOR TO MEETING; collect critical facilities corrections and updates; prepare community profile; collect historical hazard existing information;

DURING THE MEETING; prioritize hazards

COMMUNITY MEETING #3 RISK ASSESSMENTS

PRIOR TO MEETING; run hazard models and GIS analysis; prepare draft risk assessment document; public participation

DURING THE MEETING; SIU hazard presentation; introduce mitigation activities

HOMEWORK; review draft;

LOSS ESTIMATION METHODOLOGY

Direct and indirect, losses $, damage estimates, infra structure and demographic data

Hydrologic and Topographic Data: Hazard

Meeting #4

PRIOR TO MEETING; review draft risk assessment document; complete mitigation worksheet

DURING THE MEETING; develop mitigation strategies

HOMEWORK:

MEETING #5; Prior address any issues raised from previous meetings; prepare crosswalk
DURING THE MEETING; Made edits to the plan
COMMUNITY MEETING 5 & 6; Adapt plan
PRIOR TO MEETING; address any issues raised from previous meetings; prepare crosswalk
DURING THE MEETING; make edits to the plan
SEND TO FEMA; Christian County has a final plan
TIME LINE; Timeline from meeting 1 through; submitted of plan to FEMA 5&6
l. Kickoff 2. Meeting #2 Hazards 3. Meeting 3: Risk Assessments 4. Mitigation Strategies
5. Meeting and Review

ROLES AND RESPONSIBILITES
SIU and Policies
Provide Proposal and Budget for the Grant Application
Lead Meeting 1-4
Assemble Assessor Date, GIS and Weather and Hazard Plan
www.state.il.us/iema/planning/mitigation program
QUESTIONS; Important that all communities participate. If they don't participate, they will not be able to participate in the mitigation program. Must attend 2 meetings to qualify.
ASSIGNMENTS WERE MADE: Medical Care facilities Reports were given to Taylorville Memorial Hospital and Pana Community Hospital. To be completed and brought back to the next meeting.
Next Meeting will be around March 11, 2010 at the Fire House in Taylorville

Others In Attendance:

Name / Organization	Hrs.	Log	Name / Organization	Hrs.	Log
1 Mike Crews - Taylorville FD			21		
2 Jim Hill Village Palmer - President			22		
3 Margaret M. Puccetti Village of Tovey			23		
4 Gerry Grigsby - Christian County Health Dept			24		
5 William Stender Edinburg Fire			25		
6 Jim Jensen Pana			26		
7 Travis Peden Stonington P.D.			27		
8 Dave Hempstreith. Taylorville P.D.			28		
9 Robert E. Kindermann CCSO			29		
10 Marcia A. Rosenthal M'ville ESDA			30		
11 [illegible] Mville ESDA			31		
12 [illegible] Pana Hospital.			32		
13 Rod Bland Pana Fire / EMS			33		
14 Greg Brotherton - City of Taylorville			34		
15 Lora Polley Taylorville Memorial Hospital			35		
16 Jeff Tumiati Village of Stonington			36		
17 Cliff Frye - Christian CO Highway Dept			37		
18 Sharon Hill. Village of Palmer			38		
19			39		
20			40		

COMMENT: Be specific in defining the training activity. If everyone attending did not participate the same, IE: some did the pumping while others observed, indicate the participation of each individual. There may be several training areas under any topic, be sure to make specifi comments regarding what was done. Simply writing "trained on ladders, read chapter 13 in IFSTA Essentials, or viewed a video will not be accepted.

ILLINOIS MULTI-HAZARD MITIAGATION PLANNING (MHMP) INITIATIVE

March 16 1330

The meeting was held at the Taylorville Fire house and was called to order by Mike Crews. Mike introduced Jonathon Remo from SIU Carbondale, IL who conducted the meeting. The following were present representing their respective entity. Guy Choate, Midland fire, Pat Durbin, Village of Kincaid, Margaret Puccetti, Village of Tovey, Alvin Mizeur, Village of Owaneco, Jeff Tumiati, Village of Stonington, Travis Peden, Village of Stonington, Sharon Hill, Village of Palmer, Jim Hill, Village of Palmer, Jim Jensen, Pana, Brian Hile, Taylorville police, Dave Herpstreith, Taylorville police, Mickie Ryan, Christian County 911, Fred Ronnow, Gregg Fuerstenau, TUSD#3, Robert Kindermann, Christian County Sheriff, Larry Minott, MCFPD, Rod Bland, Pana fire, Brad Sims, Pana police Chief, Pam Olmstead, Assumption, Greg Hager, Pana Community Hospital, Jim Burnett, Pana Community Hospital, and Megan Cartsion SIU-C.

Jonathon identified past disasters or events that had occurred in Christian County, the goal for this meeting was identify and prioritize the probability of those events occurring in the future. What the magnitude on that community would be and then rating priority according to total. The following were identified based upon each community's likelihood for an event. For example Pana more likely to have mine subsidence than Owaneco because of the past coal mines in the Pana area.

PROABILITY X IMPACT = MAGNITUDE

Event	Probability	Magnitude	Total	Priority
Winter Storm	3	3	9	1
Thunderstorm	4	2	8	2
Tornado	3	2	6	3
Drought	2	2	4	4
Earthquake	1	4	4	5
HAZMAT	3	1	3	6
Fire/Explosion	3	1	3	7
Flooding	2	1	2	8
Subsidence	2	1	2	9
Dam Failure	1	1	1	10

<u>HOMEWORK- Mitigation</u> determines how you can lessen the impact to your community if a disaster were to occur.
Jonathon gave an overview of what could be expected over the course of the next three meetings that would be held. The next meeting scheduled in about 6 weeks will be a public meeting to their perspective on the information gathered. Meeting 4 draft and review any mitigation projects. Meeting 5 to finalize plan for submitting to IEMA. After IEMA approves plan will go to FEMA for their approval and then be referred back to the county board and individual municipality for their approval.
Respectively submitted,

Greg Hager

Others In Attendance:

Name / Organization	Hrs.	Log	Name / Organization	Hrs.	Log
1 Guy Choate Midland Fire			21 Meggin Carlson /SIUC		
2 PAT DURBIN Village of Kincaid Kincaid@Consolidated.net			22 James Burnett PANA Hospital		
3 MARGARET M. PUCCETTI VILLAGE of TOVEY			23		
4 Alvin Mizeur Village of Owaneco			24		
5 JEFF TOMIATI VILLAGE of STONINGTON			25		
6 TRAVIS Peden Stonington PD			26		
7 Sharon Hill, Village of Palmer			27 nanaw1@consolidated.net		
8 Jim Hill Village of PALMER			28		
9 Jim Jensen Pana (Ham Radio)			29 JEJ@chipsnet.com		
10 BRIAN HILL TAYLORVILLE POLICE			30		
11 DAVE HERPSTREITH TAYLORVILLE POLICE			31		
12 Mickie Ryan Christian Co 9-1-1			32		
13 FRED RONDHOW G4CC			33		
14 Gregg Fuerstenau			34		
15 ROBERT E. KINDERMANN - CCSO			35		
16 LARRY A. MINOTT MCFPD			36		
17 ROD Bland PANA FIRE			37		
18 BRAD Sims PANA PD			38		
19 Pam Olmstead - Assumption			39		
20 Greg Hager Pana Com Hospital			40 CHager@PanaHospital.com.		

COMMENT: Be specific in defining the training activity. If everyone attending did not participate the same, IE: some did the pumping while others observed, indicate the participation of each individual. There may be several training areas under any topic, be sure to make specifi c... Simply writing "trained on ladders, read chapter 13 in IFSTA Essent... accepted.

Village of Palmer
911 FIFTH ST.
PO BOX 255
Palmer, IL 62556

CHRISTIAN COUNTY:

MEETING 2 SIGN-IN

ILLINOIS MULTI-HAZARD MITIAGATION PLANNING (MHMP) INITIATIVE
May 20 13:30

The meeting was held at the Taylorville Fire house and was called to order by Mike Crews. Mike introduced Jonathon Remo from SIU Carbondale, IL who conducted the meeting. The following were present representing their respective entity. Margaret Puccetti, Village of Tovey, Jeff Tumiati, Village of Stonington, Travis Peden, Village of Stonington, Sharon Hill, Village of Palmer, Jim Hill, Village of Palmer, Jim Jensen, Pana, Dave Herpstreith, Taylorville Police, Robert Kindermann, Christian County Sheriff, Rod Bland, Pana Fire, Brad Sims, Pana Police Chief, Greg Hager, Pana Community Hospital, Cliff Frye, Christian County Highway Department, Lora Polley, Taylorville Memorial Hospital, William O'Connell, Morrisonville ESDA, Marcia Rosenthal, Morrisonville ESDA, William Stender, Edinburg Fire, Gerry Grigsby Christian County Health Department, Greg Brotherton, City of Taylorville.

Jonathon presented a draft of the Multi-Hazard Mitigation Plan (MHMP) along with the goals of FEMA and IEMA. Jonathon went over several types of natural disasters that have occurred in the state of Illinois and Christian County that resulted in the loss of life as well as property. These natural disasters included tornadoes, flooding, earthquakes, and man-made disasters such as mine subsidence and HAZMAT release.

A risk identification for tornadoes <u>(RPI=6)</u> was presented which identified structures (1121) and estimated property loss (48M) that could occur from a F4 tornado. The risk identification for flooding (RPI=2) identified (304) structures and estimated (17.5M) in property loss that could occur from a significant flood occurring. The risk identification for a 5.5 earthquake (RPI=4) could damage (1692) buildings and result in a (105M) total building related loss.

The risk identification from mine subsidence and a HAZMAT release were discussed as well.

For the next meeting which will be held in June, everyone is to look at the MIGATION IDEAS packet that was distributed and submit any ideas they have.

Respectively submitted,

Greg Hager

Meeting #3 Sign-In Sheet

1. Mike Crews, Christian Co EMA
2. Margaret Puccetti, Village of Tovey,
3. Jeff Tumiati, Village of Stonington,
4. Travis Peden, Village of Stonington,
5. Sharon Hill, Village of Palmer,
6. Jim Hill, Village of Palmer,
7. Jim Jensen, Pana,
8. Dave Herpstreith, Taylorville Police,
9. Robert Kindermann, Christian County Sheriff,
10. Rod Bland, Pana Fire,
11. Brad Sims, Pana Police Chief,
12. Greg Hager, Pana Community Hospital,
13. Cliff Frye, Christian County Highway Department,
14. Lora Polley, Taylorville Memorial Hospital,
15. William O'Connell, Morrisonville ESDA,
16. Marcia Rosenthal, Morrisonville ESDA,
17. William Stender, Edinburg Fire,
18. Gerry Grigsby Christian County Health Department,
19. Greg Brotherton, City of Taylorville.

ILLINOIS MULTI-HAZARD MITIAGATION PLANNING (MHMP) INITIATIVE
July 13 13:30

The meeting was held at the Taylorville Fire house and was called to order by Mike Crews. Mike introduced Laura Danielson from Indiana University, who conducted the meeting. The following were present representing their respective entity. Margaret Puccetti, Village of Tovey, Jim Jensen, Pana, Dave Herpstreith, Taylorville Police, Rod Bland, Pana Fire, Brad Sims, Pana Police Chief, Greg Hager, Pana Community Hospital, Lora Polley, Taylorville Memorial Hospital, Marcia Rosenthal, Morrisonville ESDA, Patrick Durbin, Village of Kincaid, Chris Daniels, Breeze-Courier, Mickie Ryan, 911, Larry Minott, Moweaqua, Nancy Pryor, Heritage Manor Pana. Jonathon Remo and Beth Ellison from SIU were also in attendance.
The intent of meeting number 5 was to identify at least two assessment needs for each hazard addressed in previous meetings. Pretending that money was not an issue what could be done for each.

1. Winter storms: What would be the feasibility of using a reverse 911 system such as Nixel to alert the public of a winter storm? Possible grant money could be used for such a project. The need for more shelters or provisions for residents of Mt. Auburn which currently do not have one.
2. Tornadoes/Thunderstorms: Shelters were again discussed as well as having available shelters in mobile home parks and discussion centered on if there were ordinances about tie downs for mobile homes. Assessment of infrastructure and hardening of buildings and bridges. What was the effectiveness of the sirens in Taylorville to alert residents of pending storms (*public awareness*)? Weather radios are currently available in schools and hospitals. There was some concern for generators/transfer switches to be used for assisted living facilities which are not currently regulated to have such.
3. Extreme heat/drought: Some villages such as Tovey have issues with power failure to their sewage pumps. No ownership as to who is responsible.
4. Earthquakes: Infrastructure concerns with needs of building and bridge hardening.

5. Hazmat: Equipment and training continues to be the biggest issues while some entities receive assistance through MABUS. Taylorville has a hazmat team in place and can provide assistance to others.
6. Fire/explosions: Most towns and villages have covered with their fire departments and mutual aid agreements.
7. Flooding: Replacement and new culverts need to occur throughout the county and raising of some roads which constantly flood. Several intersections in Pana were mentioned which seem to always flood. The need for county legislation on building requirements to prevent water drainage outside of normal flow.
8. Mine subsidence: Are there building ordinances in place to prevent structures being erected on old mine sites and are the public aware of old mines are located prior to purchasing land.
9. Dam/Levee failure: There are currently 13 dams in the county and 1 levee. There have been no recent issues.

The next step is for SIU to take these recommendations and prioritize the as high, medium and low priority based upon a 1-3-5 year plan. Again assuming that money was not an issue. As many communities as possible will need to attend the meeting planned for August to critique, finalize and approve the plan for submission to IEMA. Once plan is submitted it cannot be changed without going through the process again. It is estimated that IEMA will take one week to approve and then it will be sent to FEMA for approval with an estimate for 3-6 months for their approval, average time has been running around 3 months depending on how many others are awaiting approval. Mike Crews adjourned the meeting at 1420.

Respectively submitted,

Greg Hager

Mitigation Meeting #4 7-13-10

Others In Attendance:

	Name / Organization	Hrs.	Log		Name / Organization	Hrs.	Log
1	Mike Crews - CCEMA			21			
2	Greg Hogan PCH			22			
3	Nancy Pryor Heritage Manor) Pana -			23			
4	LORA POLVEY TMH			24			
5	Jim Jensen Pana			25			
6	Margaret McQuarrie Tovey			26			
7	PATRICK DURBIN KINCAID			27			
8	Dave Hempstreith TPD			28			
9	BRAD SIMS PANA PD			29			
10	Rod Bland PANA FIRE/EMS			30			
11	Chris Daniels Breeze-Courier			31			
12	Mickie Ryan 9-1-1			32			
13	Marcia Rosenthal Morrisonville EMS			33			
14	LARRY A. MINOTT MOWEAQUA			34			
15				35			
16				36			
17				37			
18				38			
19				39			
20				40			

COMMENT: Be specific in defining the training activity. If everyone attending did not participate the same, IE: some did the pumping while others observed, indicate the participation of each individual. There may be several training areas under any topic, be sure to make specifi comments regarding what was done. Simply writing "trained on ladders, read chapter 13 in IFSTA Essentials, or viewed a video will not be accepted.

Meeting #5

Mike Crews opened the meeting with an overview of what was to happen from this point on with the plan. He stated that the plan could be reviewed by the Planning Team members for about 2 weeks so everyone would have ample amount of time look at and review the plan for any discrepancies. He also stated that in approximately 3 weeks the plan would be sent to IEMA/FEMA. They would then review it and if everything is OK with the plan, then we should hear back from IEMA/FEMA hopefully by January for their approval.

Mike then explained that once it comes back approved, then a Resolution will have to be passed by all municipalities. After they are passed, they needed to be returned Mike and he will forward them on to FEMA. Once FEMA gets the Resolutions, they will send notification that the municipality has a completed and approved plan.

He also explained that once the plan is submitted to IEMA/FEMA for their review, the municipalities can begin formulating and putting together their projects for funding. .

It was also explained to the planning team that FEMA will require a five-year update to the plan. Mike told the planning team that in another five years, the members should come together again, most likely under the direction of the ESDA Director, to review the plan and make any necessary changes to it. He explained that FEMA will probably send out a reminder as to when this is supposed to take place.

After Mike explained the above process, he pointed out specific tables and places in the plan that needed clarification from the team members. After discussing a few changes, the planning team members looked at the plan for a while longer.

Since there were no more comments about the plan, the meeting was adjourned.

Others In Attendance:

Name / Organization	Hrs.	Log	Name / Organization	Hrs.	Log
1 Michael Cross - Christian Co EMA			21		
2 Jim Hill Pana President			22		
3 Sharon Hill			23		
4 W.C. O'Connell Village of Morrisonville	ESDA		24		
5 Margaret McQuerrith Village of Tovey			25		
6 Jim Jensen - Pana			26		
7 Ron Bland Pana Fire/Gas			27		
8 Brad Sims Pana P.D.			28		
9 Mickie Ryan Christian Co 9-1-1			29		
10 Greg Hager (PCH)			30		
11 Laura Wolfe Bier Council			31		
12			32		
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COMMENT: Be specific in defining the training activity. If everyone attending did not participate the same, IE: some did the pumping while others observed, indicate the participation of each individual. There may be several training areas under any topic, be sure to make specifi comments regarding what was done. Simply writing "trained on ladders, read chapter 13 in IFSTA Essentials, or viewed a video will not be accepted.

Appendix B: Local Newspaper Articles and Photographs

The Christian County Hazard Mitigation Planning Team (CCHMPT) encourages community input into planning efforts by hosting a public meeting at the Taylorville Fire Department on September 1 at 1:30 p.m.

The intent of this meeting is to educate the community on the mitigation planning process and encourage public input. This meeting will also serve as a forum for the public to voice their opinions and concerns about the mitigation plan. "We are counting on public comment to help us mold the plan to fit our local communities," stated Mike Crews, chair of the committee.

Through a grant from FEMA and administered by the Illinois Emergency Management (IEMA) Agency, the CCHAMT will identify local risks and develop plans to mitigate those risks. "Christian County is geographically situated in an area that has historically produced severe weather disaster. Our county also has rail and highway crossings that carry tons of hazardous materials through our communities each day. The CCHAMT looks as ways of reducing the reducing social and economic losses before a disaster occurs," Mike Crews said.

Once the plan is written, it will be submitted to IEMA for evaluation and forwarded to FEMA for final approval.

Second Public Announcement in the *Breeze-Courier*

Christian County Hazardous Mitigation Team

The Christian County Hazardous Mitigation Team will hold the final meeting on September 1, 2010 at 1:30 in the Taylorville Fire Dept. classroom. During the meeting Christian County Emergency Management Director Mike Crews will solicit feedback, corrections, etc., from the plan draft and forward that information to SIU.

Article about Hazard Mitigation Meeting in July within the *Breeze-Courier*

Local

August 06, 2010

7/14/2010 2:36:00 PM **Email this article** • **Print this article**

Hazard mitigation a top priority for county

By Chris Daniels
Breeze-Courier Writer

TAYLORVILLE - Safety is something most people value. Having a plan to maintain your current level of safety is also very important. The Christian County Multi-Hazard Mitigation Planning Team certainly understands the value of safety. This team, which is comprised of representatives from various departments and towns throughout our county, has been working together through a brainstorming process to better prepare the county for handling and preventing disaster.

Since February, the team has met on four separate occasions and Tuesday afternoon was the most recent gathering. During their meetings, team members have ranked disaster risks, winter storms were ranked number one with tornadoes and thunderstorms coming in at second and third, and developed at least two mitigation ideas for each risk.

According to Christian County's draft mitigation plan, hazard mitigation is defined as any sustained action to reduce or eliminate long-term risk to human life and property from hazards. The Federal Emergency Management Agency (FEMA) has made reducing hazards one of its primary goals; hazard mitigation planning and the subsequent implementation of resulting projects, measures, and policies is a primary mechanism in achieving FEMA's goal.

Jonathan Remo and Beth Ellison, both of Southern Illinois University in Carbondale, along with Laura Danielson, of Indiana University Purdue University Indianapolis, have assisted 17 Illinois counties with the development of Multi-Hazard Mitigation Plans and are currently working with 15 more counties, including ours.

The Multi-Hazard Mitigation Plan (MHMP) is a requirement of the Federal Disaster Mitigation Act of 2000. The development of a local government plan is required in order to maintain eligibility for certain federal disaster assistance and hazard mitigation funding programs. In order for the National Flood Insurance Program communities to be eligible for future mitigation funds, they must adopt an MHMP.

"The Illinois Emergency Management Agency has been very proactive and we should have plans developed in all eligible Illinois counties within two years. Christian County wasn't the first county by any means to get a plan developed but they aren't the last either. This county has really finished in the middle of the pack and that's not a bad thing," explained Remo.

At the team's next meeting, the MHMP will be looked over by team members and any necessary changes will be made.

"It is important to get as many communities together as possible for the next meeting," said Danielson. "Any necessary changes should be made at this meeting before returning the draft to SIU. After SIU receives the plan they will submit it to FEMA."

The date for the team's next, and final, planning meeting has not been set, but it should take place sometime in the middle of August. All meetings have been held in the Emergency Operations Center at 202 N. Main Street in the Taylorville Fire Department.

Ideally, team members will hold annual meetings to review the county's MHMP and update mitigation strategies. The MHMP must be resubmitted to FEMA every five years.

The Christian County Multi-Hazard Mitigation Planning Team is headed by Mike Crews, who is the primary point of contact.

Chris Daniels can be reached at cdaniels@breezecourier.com or 824-2233

Article about final Hazard Mitigation Meeting in the *Breeze-Courier*

Christian County Hazard Mitigation Team finalizes plan

TAYLORVILLE - Disaster can happen at any given time. It cannot always be prevented, but a community can always be prepared.

The Christian County Hazard Mitigation Planning Team met on Wednesday, September 1, to finalize the county wide preparation and relief program. The purpose of the plan is to develop options before disaster strikes. "When disaster occurs, everything after it is considered recovery. A mitigation plan looks at what you can do before the disaster happens," Mike Crews, Chair of the Committee said.

Illinois has a history of severe weather situations. By informing citizens on how to prepare and respond to extreme weather, and operate a quick plan of action, communities can recovery with more ease.

But the mitigation plan is not solely for weather. It can also be utilized for events like hazardous spills or terrorists attacks. The mitigation plan takes certain factors into consideration, like the safest places to build railroads, to prevent future disasters from ever occurring.

During the meeting Wednesday, representatives from the majority of surrounding communities were present to give their final input towards the plan. Minor corrections were fixed so it can be sent to the Illinois Emergency Management Agency (IEMA). Once IEMA evaluates the plan, they will forward it to the Federal Emergency Management Agency (FEMA) for approval.

Appendix C: Adopting Resolutions

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, Christian County recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, Christian County participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Christian County Commissioners hereby adopt the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS ______________ Day of __________________, 2010.

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County Commissioner Chairman

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County Commissioner

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County Commissioner

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Attested by: County Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Taylorville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Taylorville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Taylorville hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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City Mayor

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City Council Member

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City Council Member

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City Council Member

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City Council Member

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Attested by: City Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the City of Pana recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the City of Pana participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the City of Pana hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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City Mayor

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City Council Member

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City Council Member

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City Council Member

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City Council Member

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Attested by: City Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Assumption recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Assumption participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Assumption hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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City Mayor

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City Council Member

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City Council Member

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City Council Member

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City Council Member

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Attested by: City Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Edinburg recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Edinburg participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Edinburg hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Jeisyville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Jeisyville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Jeisyville hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS ______________ Day of __________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Kincaid recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Kincaid participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Kincaid hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Morrisonville recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Morrisonville participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Morrisonville hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Owaneco recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Owaneco participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Owaneco hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Moweaqua recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Moweaqua participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Moweaqua hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS ____________ Day of ________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Palmer recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Palmer participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Palmer hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Stonington recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Stonington participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Stonington hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Resolution #_____________

ADOPTING THE CHRISTIAN COUNTY MULTI-HAZARD MITIGATION PLAN

WHEREAS, the Village of Tovey recognizes the threat that natural hazards pose to people and property; and

WHEREAS, undertaking hazard mitigation actions before disasters occur will reduce the potential for harm to people and property and save taxpayer dollars; and

WHEREAS, an adopted multi-hazard mitigation plan is required as a condition of future grant funding for mitigation projects; and

WHERAS, the Village of Tovey participated jointly in the planning process with the other local units of government within the County to prepare a Multi-Hazard Mitigation Plan;

NOW, THEREFORE, BE IT RESOLVED, that the Village of Tovey hereby adopts the Christian County Multi-Hazard Mitigation Plan as an official plan; and

BE IT FURTHER RESOLVED that the Christian County Emergency Management Agency will submit on behalf of the participating municipalities the adopted Multi-Hazard Mitigation Plan to the Illinois Department of Homeland Security and the Federal Emergency Management Agency for final review and approval.

ADOPTED THIS _____________ Day of _________________, 2010.

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Village President

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Village Council Member

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Village Council Member

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Village Council Member

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Village Council Member

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Attested by: Village Clerk

Appendix D: NCDC Historical Hazards

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
CHRISTIAN	11/15/1955	1645	Tornado	F1	0	0	0K	0
CHRISTIAN	6/10/1958	1830	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/10/1958	1830	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/10/1958	1848	Tstm Wind	50 kts.	0	0	0	0
CHRISTIAN	6/10/1958	1848	Tstm Wind	50 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1542	Tstm Wind	70 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1542	Tstm Wind	70 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1615	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1615	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1700	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/13/1958	1700	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	9/28/1959	1805	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	9/30/1961	1345	Tornado	F1	0	0	25K	0
CHRISTIAN	9/30/1961	1410	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	4/2/1964	1949	Tornado	F2	0	0	25K	0
CHRISTIAN	3/29/1968	1400	Hail	1.50 in.	0	0	0	0
CHRISTIAN	11/15/1973	445	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	3/4/1974	1645	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	4/3/1974	1345	Tornado	F1	0	0	250K	0
CHRISTIAN	5/30/1974	1500	Hail	0.75 in.	0	0	0	0
CHRISTIAN	5/30/1974	1500	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/14/1974	1500	Hail	1.00 in.	0	0	0	0
CHRISTIAN	5/11/1975	1700	Tornado	F1	0	2	3K	0
CHRISTIAN	5/30/1975	1456	Hail	1.50 in.	0	0	0	0
CHRISTIAN	7/8/1975	1830	Tornado	F2	0	0	0K	0
CHRISTIAN	11/9/1975	2228	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	11/30/1975	10	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	2/16/1976	1515	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	2/16/1976	1530	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	2/16/1976	1545	Tornado	F2	0	0	250K	0
CHRISTIAN	3/20/1976	1212	Tornado	F3	0	0	250K	0
CHRISTIAN	2/23/1977	1050	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	5/5/1977	2210	Hail	1.75 in.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
CHRISTIAN	5/16/1977	2100	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	8/6/1977	1530	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	8/6/1977	1555	Tornado	F0	0	0	0K	0
CHRISTIAN	8/6/1977	1600	Tornado	F1	0	0	0K	0
CHRISTIAN	9/30/1977	1830	Hail	1.75 in.	0	0	0	0
CHRISTIAN	5/26/1982	1350	Hail	1.00 in.	0	0	0	0
CHRISTIAN	5/1/1983	1900	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	4/27/1984	1530	Hail	0.75 in.	0	0	0	0
CHRISTIAN	4/29/1984	2017	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	8/28/1984	2135	Hail	1.75 in.	0	0	0	0
CHRISTIAN	7/29/1986	255	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	7/31/1986	345	Tstm Wind	56 kts.	0	0	0	0
CHRISTIAN	7/31/1986	400	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	7/31/1986	425	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	4/13/1987	930	Tornado	F1	0	2	25K	0
CHRISTIAN	3/24/1988	2249	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	4/5/1988	1936	Tstm Wind	61 kts.	0	0	0	0
CHRISTIAN	5/25/1989	1017	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/1/1989	1445	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/20/1990	125	Hail	1.75 in.	0	0	0	0
CHRISTIAN	10/17/1990	1800	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	10/4/1991	1829	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/17/1992	1550	Tstm Wind	0 kts.	0	0	0	0
CHRISTIAN	6/17/1992	1555	Tstm Wind	0 kts.	0	0	0	0
Central Il	4/12/1994	1200	Flooding	N/A	0	0	50.0M	0
Taylorville	4/26/1994	1815	Hail	0.75 in.	0	0	0	0
Taylorville	4/26/1994	1830	Thunderstorm Winds	0 kts.	0	0	0	0
Taylorville	4/26/1994	2100	Hail	1.00 in.	0	0	0	0
Morrisonville	7/2/1994	1510	Thunderstorm Winds	0 kts.	0	0	0	0
Mt. Auburn	5/27/1995	1828	Thunderstorm Winds	0 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Stonington	5/27/1995	1855	Thunderstorm Winds	0 kts.	0	0	0	0
Taylorville	6/8/1995	745	Thunderstorm Winds	0 kts.	0	0	0	0
Kincaid	6/20/1995	1756	Thunderstorm Winds	0 kts.	0	0	0	0
Morrisonville	6/20/1995	1822	Thunderstorm Winds	0 kts.	0	0	0	0
Central Illinois	12/8/1995	700	Winter Storm	N/A	1	0	0	0
Central Illinois	12/18/1995	1900	Winter Storm	N/A	1	0	0	0
ILZ043>046 - 052>057 - 061>063 - 066>068 - 071>073	1/2/1996	2:00 AM	Winter Storm	N/A	0	4	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/4/1996	3:00 AM	Winter Storm	N/A	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/18/1996	10:00 AM	Winter Storm	N/A	0	2	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	2/2/1996	12:00 AM	Extreme Cold	N/A	2	0	0	0
Taylorville Muni Arp	2/26/1996	6:58 PM	Tstm Wind	50 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	3/25/1996	4:00 AM	High Wind	0 kts.	1	0	0	0
ILZ042 - 051>054 - 056 - 061>063 - 066>068	4/28/1996	9:15 AM	High Wind	53 kts.	0	0	0	0
Morrisonville	5/8/1996	11:40 AM	Tstm Wind	0 kts.	0	0	0	0
Taylorville	5/8/1996	11:55 AM	Tstm Wind	0 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Taylorville	6/2/1996	9:40 PM	Tstm Wind	0 kts.	0	0	0	0
Taylorville	10/29/1996	5:30 PM	Tstm Wind	0 kts.	0	0	0	0
ILZ044>046 - 052>057 - 061	11/25/1996	10:00 AM	Winter Storm	N/A	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/8/1997	9:00 PM	Heavy Snow	N/A	0	6	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/15/1997	3:00 AM	Winter Storm	N/A	1	7	0	0
ILZ027>031 - 036>038 - 040>043 - 047>053	1/24/1997	7:00 AM	Winter Storm	N/A	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/26/1997	5:00 AM	Winter Storm	N/A	0	9	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063	4/6/1997	9:15 AM	High Wind	56 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	4/30/1997	2:00 PM	High Wind	61 kts.	0	1	38K	0
Morrisonville	4/30/1997	2:19 PM	Tstm Wind	0 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	7/26/1997	9:00 AM	Excessive Heat	N/A	2	0	0	0
Mt Auburn	8/24/1997	3:34 PM	Tstm Wind	0 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>053	9/29/1997	10:00 AM	High Wind	55 kts.	0	0	0	0
ILZ027 - 036 - 040>041 - 047>052 - 061 - 066 - 071	12/30/1997	8:00 AM	Heavy Snow	N/A	3	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ILZ027>030 - 036>038 - 040>043 - 047>053	1/14/1998	6:00 AM	Winter Storm	N/A	0	0	0	0
ILZ027>031 - 036>038 - 040>057	3/8/1998	10:00 PM	Winter Storm	N/A	2	0	0	0
Sicily	4/7/1998	4:30 PM	Hail	2.00 in.	0	0	0	0
Assumption	4/7/1998	5:14 PM	Tornado	F0	0	0	0	0
Kincaid	5/22/1998	9:27 PM	Hail	1.00 in.	0	0	0	0
Stonington	6/12/1998	3:35 PM	Tstm Wind	0 kts.	0	0	0	0
Assumption	6/12/1998	5:35 PM	Hail	0.75 in.	0	0	0	0
Mt Auburn	6/14/1998	6:52 PM	Tornado	F0	0	0	0	0
Kincaid	6/18/1998	7:51 PM	Tstm Wind	52 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	6/26/1998	3:00 AM	Excessive Heat	N/A	1	0	0	0
Countywide	6/29/1998	4:34 PM	Tstm Wind	0 kts.	0	0	0	0
Kincaid	7/22/1998	2:27 PM	Tstm Wind	0 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063	11/10/1998	4:30 AM	High Wind	57 kts.	0	1	60K	0
Taylorville	11/10/1998	5:15 AM	Tstm Wind	0 kts.	0	0	40K	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066	1/1/1999	12:00 PM	Heavy Snow	N/A	1	1	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	1/5/1999	5:00 AM	Extreme Cold	N/A	0	0	0	0
ILZ044>046 - 052>054 - 056>057 - 061	1/13/1999	4:00 AM	Ice Storm	N/A	0	0	0	0
Harvel	4/5/1999	5:20 PM	Tstm Wind	52 kts.	0	0	0	0
Sicily	4/8/1999	8:53 PM	Tstm Wind	0 kts.	0	0	0	0
Pana	4/8/1999	9:28 PM	Tstm Wind	63 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Morrisonville	6/1/1999	6:13 PM	Tornado	F1	0	0	750K	0
Countywide	6/1/1999	6:15 PM	Tstm Wind	61 kts.	0	0	0	0
Palmer	6/1/1999	6:20 PM	Hail	1.00 in.	0	0	0	0
Tovey	6/8/1999	4:08 PM	Hail	1.00 in.	0	0	0	0
Pana	6/11/1999	1:55 PM	Hail	0.75 in.	0	0	0	0
Pana	6/11/1999	2:00 PM	Tstm Wind	0 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	7/20/1999	10:00 AM	Excessive Heat	N/A	4	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	7/28/1999	10:00 AM	Excessive Heat	N/A	1	0	0	0
Edinburg	8/12/1999	9:35 PM	Tstm Wind	0 kts.	0	0	0K	0
ILZ050>052 - 054>057 - 061>063 - 066>068 - 071>073	3/11/2000	4:00 AM	Heavy Snow	N/A	1	9	0	0
Morrisonville	4/20/2000	8:05 AM	Hail	0.75 in.	0	0	0	0
Pana	5/12/2000	6:45 PM	Hail	1.00 in.	0	0	0	0
Stonington	5/26/2000	11:34 PM	Tstm Wind	0 kts.	0	0	0	0
Stonington	6/4/2000	7:55 PM	Hail	1.00 in.	0	0	0	0
Edinburg	6/14/2000	11:25 AM	Tstm Wind	0 kts.	0	0	0	0
Taylorville	6/23/2000	6:20 PM	Tstm Wind	0 kts.	0	0	0	0
Stonington	7/5/2000	5:05 PM	Tstm Wind	0 kts.	0	0	0	0
Stonington	8/2/2000	6:45 PM	Tstm Wind	0 kts.	0	0	0	0
Countywide	10/5/2000	1:20 AM	Flash Flood	N/A	0	0	0	0
ILZ038 - 043>047 - 052>057 - 061>063 - 066>068 - 071>073	12/13/2000	5:00 PM	Winter Storm	N/A	1	1	0	0
Palmer	2/9/2001	9:00 AM	Tstm Wind	50 kts.	0	0	0	0
Kincaid	4/10/2001	10:00 PM	Flash Flood	N/A	0	0	0	0
Taylorville	5/17/2001	6:30 PM	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Taylorville	5/22/2001	12:15 PM	Tstm Wind	50 kts.	0	0	0	0
Kincaid	5/23/2001	1:54 PM	Tstm Wind	50 kts.	0	0	0	0
Pana	5/23/2001	12:45 PM	Tstm Wind	50 kts.	0	0	0	0
Countywide	6/6/2001	3:30 AM	Flash Flood	N/A	0	0	0	0
Grove City	7/4/2001	9:57 PM	Tstm Wind	50 kts.	0	0	0	0
Owaneco	7/4/2001	10:40 PM	Tstm Wind	50 kts.	0	0	0	0
Taylorville	7/17/2001	4:57 PM	Tstm Wind	50 kts.	0	0	0	0
Taylorville	7/23/2001	5:15 PM	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	8/18/2001	3:14 PM	Hail	1.25 in.	0	0	0	0
Morrisonville	8/30/2001	4:30 PM	Tstm Wind	50 kts.	0	0	0	0
Pana	10/24/2001	12:35 PM	Tstm Wind	50 kts.	0	0	0	0
ILZ045>046 - 051>052 - 054>055	2/26/2002	1:00 AM	Heavy Snow	N/A	0	0	0	0
ILZ044>046 - 051>057 - 061>063	3/25/2002	9:00 PM	Winter Storm	N/A	0	0	0	0
Mt Auburn	4/19/2002	5:36 PM	Hail	0.75 in.	0	0	0	0
North Portion	4/19/2002	9:00 PM	Flash Flood	N/A	0	0	0	0
Taylorville	4/21/2002	8:00 AM	Flash Flood	N/A	0	0	0	0
Morrisonville	5/1/2002	2:15 PM	Flash Flood	N/A	0	0	0	0
Morrisonville	5/1/2002	2:20 PM	Hail	2.00 in.	0	0	0	0
ILZ052 - 068	5/6/2002	2:40 PM	Flood	N/A	0	0	0	0
Morrisonville	5/6/2002	5:00 AM	Flash Flood	N/A	0	0	0	0
Countywide	5/7/2002	3:00 AM	Flash Flood	N/A	0	0	0	0
Countywide	5/12/2002	7:00 AM	Flash Flood	N/A	0	0	0	0
ILZ044>046 - 050>056 - 061>063 - 066>068 - 071>073	5/12/2002	9:00 AM	Flood	N/A	0	1	0	0
Taylorville	5/27/2002	3:35 PM	Hail	1.00 in.	0	0	0	0
South Portion	5/27/2002	4:10 PM	Flash Flood	N/A	0	0	0	0
North Portion	6/11/2002	4:00 PM	Flash Flood	N/A	0	0	0	0
Countywide	6/13/2002	5:00 AM	Flash Flood	N/A	0	0	0	0
ILZ042>053	2/14/2003	11:00 PM	Winter Storm	N/A	0	0	0	0
Kincaid	5/6/2003	7:16 PM	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Edinburg	5/10/2003	7:08 AM	Tstm Wind	65 kts.	0	0	0	0
Kincaid	5/10/2003	7:08 AM	Tornado	F0	0	0	0	0
Taylorville	7/18/2003	4:20 AM	Tstm Wind	62 kts.	0	0	0	0
Rosamond	7/18/2003	5:10 AM	Hail	1.00 in.	0	0	0	0
Kincaid	8/2/2003	2:52 PM	Hail	0.88 in.	0	0	0	0
Countywide	8/2/2003	3:45 PM	Flash Flood	N/A	0	0	0	0
Morrisonville	8/2/2003	4:15 PM	Hail	0.88 in.	0	0	0	0
Owaneco	8/31/2003	3:14 PM	Tornado	F1	0	0	0	0
Morrisonville	5/13/2004	7:15 PM	Flash Flood	N/A	0	0	0	0
Taylorville	5/23/2004	6:05 PM	Tstm Wind	53 kts.	0	0	0	0
Morrisonville	5/23/2004	8:15 PM	Flash Flood	N/A	0	0	0	0
Countywide	5/24/2004	11:25 PM	Tstm Wind	55 kts.	0	0	0	0
Pana	5/27/2004	4:02 PM	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	5/31/2004	7:36 PM	Tstm Wind	50 kts.	0	0	0	0
Mt Auburn	7/11/2004	3:10 PM	Tstm Wind	55 kts.	0	0	0	0
Taylorville	7/22/2004	1:30 PM	Tstm Wind	50 kts.	0	0	0	0
ILZ044>046 - 052>056 - 061	11/24/2004	3:00 PM	High Wind	52 kts.	0	0	0	0
Assumption	1/12/2005	11:45 PM	Tstm Wind	50 kts.	0	0	0	0
Countywide	1/13/2005	12:30 AM	Flash Flood	N/A	0	0	0	0
Pana	3/30/2005	5:06 PM	Hail	0.75 in.	0	0	0	0
Northeast Portion	5/11/2005	6:55 PM	Flash Flood	N/A	0	0	0	0
Stonington	5/19/2005	5:54 PM	Tstm Wind	50 kts.	0	0	0	0
Edinburg	6/8/2005	3:00 PM	Tstm Wind	50 kts.	0	0	0	0
Taylorville	6/8/2005	3:15 PM	Tstm Wind	50 kts.	0	0	0	0
Rosamond	6/8/2005	3:45 PM	Tstm Wind	65 kts.	0	0	0	0
Grove City	6/13/2005	5:47 PM	Tstm Wind	50 kts.	0	0	0	0
Edinburg	6/13/2005	5:55 PM	Tstm Wind	50 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	7/22/2005	12:00 PM	Excessive Heat	N/A	1	0	0	0
Pana	8/13/2005	5:00 PM	Tstm Wind	50 kts.	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
Mt Auburn	8/18/2005	10:00 PM	Tstm Wind	50 kts.	0	0	0	0
Kincaid	9/8/2005	5:50 PM	Tstm Wind	50 kts.	0	0	0	0
Stonington	9/19/2005	6:17 PM	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	11/5/2005	10:07 PM	Tstm Wind	52 kts.	0	0	0	0
Mt Auburn	3/12/2006	8:39 PM	Funnel Cloud	N/A	0	0	0	0
ILZ049>052 - 061	3/21/2006	4:30 AM	Blizzard	N/A	0	0	0	0
Morrisonville	4/2/2006	4:58 PM	Tornado	F0	0	0	0	0
Rosamond	4/2/2006	5:00 PM	Tstm Wind	56 kts.	0	0	0	0
Taylorville	4/2/2006	5:08 PM	Tornado	F1	0	1	0	0
Pana	4/2/2006	5:15 PM	Tornado	F1	0	0	0	0
Taylorville	4/2/2006	5:17 PM	Tornado	F0	0	0	0	0
Assumption	4/2/2006	5:20 PM	Tornado	F1	0	0	0	0
Taylorville	4/16/2006	1:53 PM	Tornado	F0	0	0	0	0
Assumption	4/16/2006	2:05 PM	Tornado	F0	0	0	0	0
Stonington	4/16/2006	2:07 PM	Tornado	F0	0	0	0	0
Taylorville	4/30/2006	2:50 PM	Tstm Wind	58 kts.	0	0	0	0
Morrisonville	5/24/2006	3:10 PM	Tornado	F0	0	0	0	0
Palmer	5/24/2006	3:23 PM	Tstm Wind	50 kts.	0	0	0	0
Edinburg	5/24/2006	3:27 PM	Tstm Wind	50 kts.	0	0	0	0
Morrisonville	5/24/2006	3:27 PM	Tstm Wind	52 kts.	0	0	0	0
Taylorville	5/24/2006	3:33 PM	Hail	0.88 in.	0	0	0	0
Stonington	6/3/2006	2:41 PM	Hail	1.75 in.	0	0	0	0
Pana	6/3/2006	3:20 PM	Hail	0.75 in.	0	0	0	0
Pana	6/3/2006	3:27 PM	Hail	1.00 in.	0	0	0	0
Owaneco	6/26/2006	1:58 PM	Hail	1.00 in.	0	0	0	0
Stonington	7/19/2006	5:11 PM	Tstm Wind	56 kts.	0	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	7/30/2006	11:00 AM	Heat	N/A	1	0	0	0
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071>073	8/1/2006	12:00 AM	Heat	N/A	0	0	0	0

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
ILZ042 - 051 - 052	11/30/2006	9:00 AM	Winter Storm	N/A	0	0	0K	0K
ILZ027>031 - 036>038 - 040>045 - 047>054 - 061	12/1/2006	12:00 AM	Winter Storm	N/A	0	0	0K	0K
ILZ052	1/12/2007	21:00 PM	Ice Storm	N/A	0	0	0K	0K
ILZ040 - 044 - 047>057 - 061	2/12/2007	22:00 PM	Blizzard	N/A	0	0	0K	0K
ILZ040 - 044 - 047>057 - 061	2/12/2007	22:00 PM	Winter Storm	N/A	0	0	0K	0K
Taylorville	3/1/2007	12:19 PM	Hail	0.75 in.	0	0	0K	0K
Taylorville	3/1/2007	12:19 PM	Thunderstorm Wind	70 kts.	0	0	0K	0K
Kincaid	3/31/2007	18:08 PM	Thunderstorm Wind	61 kts.	0	0	0K	0K
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071	4/5/2007	12:00 AM	Frost/freeze	N/A	0	0	0K	0K
Assumption	4/25/2007	13:40 PM	Tornado	F0	0	0	0K	0K
Taylorville	5/26/2007	16:22 PM	Hail	1.00 in.	0	0	0K	0K
ILZ040>043 - 052	12/8/2007	13:00 PM	Ice Storm	N/A	0	0	0K	0K
ILZ049>053	12/15/2007	3:00 AM	Heavy Snow	N/A	0	0	0K	0K
ILZ049>052	1/31/2008	13:00 PM	Heavy Snow	N/A	0	0	0K	0K
ILZ029>031 - 036>038 - 041>055 - 061	2/1/2008	12:00 AM	Heavy Snow	N/A	0	0	0K	0K
ILZ027>031 - 036>038 - 040>057 - 061>063 - 066>068 - 071	2/4/2008	2:00 AM	Dense Fog	N/A	0	0	0K	0K
Taylorville	5/2/2008	8:30 AM	Thunderstorm Wind	55 kts.	0	0	20K	0K
Edinburg	5/11/2008	1:00 AM	Thunderstorm Wind	61 kts.	0	0	25K	0K
Mt Auburn	5/30/2008	17:42 PM	Hail	0.75 in.	0	0	0K	0K
Taylorville	5/30/2008	19:15 PM	Thunderstorm	52 kts.	0	0	0K	0K

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
			Wind					
Taylorville	5/30/2008	19:20 PM	Tornado	F0	0	0	0K	0K
Taylorville	5/30/2008	20:13 PM	Flash Flood	N/A	0	0	0K	0K
Edinburg	6/3/2008	1:35 AM	Thunderstorm Wind	61 kts.	0	0	15K	0K
Taylorville	6/3/2008	20:46 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
Kincaid	6/22/2008	17:00 PM	Hail	0.75 in.	0	0	0K	0K
Roby	7/8/2008	16:03 PM	Thunderstorm Wind	52 kts.	0	0	8K	0K
Pana	7/8/2008	16:41 PM	Thunderstorm Wind	52 kts.	0	0	5K	0K
Taylorville	7/11/2008	16:45 PM	Lightning	N/A	0	0	35K	0K
Taylorville	8/5/2008	18:17 PM	Thunderstorm Wind	52 kts.	0	0	2K	0K
Taylorville	8/5/2008	18:17 PM	Thunderstorm Wind	52 kts.	0	0	8K	0K
Kincaid	12/27/2008	12:55 PM	Thunderstorm Wind	52 kts.	0	0	55K	0K
Sharpsburg	12/27/2008	14:05 PM	Thunderstorm Wind	52 kts.	0	0	15K	0K
Owaneco	3/8/2009	11:10 AM	Thunderstorm Wind	52 kts.	0	0	40K	0K
ILZ052	3/8/2009	12:28 PM	High Wind	52 kts.	0	0	4K	0K
ILZ045 - 052	3/8/2009	13:00 PM	High Wind	52 kts.	0	0	15K	0K
Palmer	5/7/2009	17:32 PM	Hail	1.00 in.	0	0	0K	0K
Palmer	5/7/2009	17:43 PM	Hail	1.00 in.	0	0	0K	0K
Stonington	5/7/2009	18:37 PM	Hail	0.75 in.	0	0	0K	0K
Vanderville	5/13/2009	22:58 PM	Thunderstorm Wind	65 kts.	0	0	25K	0K
Rosamond	5/13/2009	23:04 PM	Tornado	F1	0	0	50K	0K
Roby	5/13/2009	23:45 PM	Flash Flood	N/A	0	0	0K	0K
Mt Auburn	5/15/2009	18:15 PM	Hail	0.88 in.	0	0	0K	0K
Sicily	5/15/2009	19:15 PM	Flash Flood	N/A	0	0	0K	0K
Morrisonville	8/4/2009	7:52 AM	Thunderstorm	61 kts.	0	0	10K	0K

Location or County	Date	Time	Type	Mag	Dth	Inj	PrD	CrD
			Wind					
Taylorville	8/4/2009	7:55 AM	Thunderstorm Wind	61 kts.	0	0	40K	0K
Taylorville	8/19/2009	15:05 PM	Thunderstorm Wind	52 kts.	0	0	30K	0K
TOTALS:					24	47	52.120M	0

Christian County Picture Index

THUNDERSTORM/ICE/WIND


Description: *Pieces of a roof from Kenton Blvd. landed in a yard a block away.*

Description: *Debris caught in trees in Kenton Addition*

File Name: Thunderstorm_March_2007_1 or 2 or3
Event: Thunderstorm
Date: March 1st 2007
Source: http://breezecourier.com/main.asp?SectionID=9&SubSectionID=514&TM=72307.78


Description: *Photos courtesy of Dale Simmons and Jerry Durbin At approximately 5 p.m. Monday, a heavy storm accompanied by hail struck the Palmer area. There were reports of an accumulation of at least two inches and the hail was one inch in diameter.*
File Name: Hail_May_2002
Event: Hail Storm
Date: May 202
Source:
http://breezecourier.com/main.asp?SectionID=9&SubSectionID=416&TP=8&UID=11610569

WINTERSTORM

Description: *Huge trees split to their bases while others lay against houses after a winter storm pelted the area with ice. Snow followed this morning. (Photo by Teresa Nelson)*

Description: *The cleanup following an ice storm which hit Christian County last night will take crews several days. Trees and branches were taken to the ground by the weight of the ice.*

Description: *The Christian County Courthouse lawn was closed for business today following a winter ice storm which took down power lines and left a big chill in area businesses and homes. (Photo by Teresa Nelson)*

Description: *3x StormAlexander Branches which fell from trees blocked the driveways of some Taylorville residents. (Photo by Teresa Nelson)*

File Name: Winterstorm_December_2006

Event: Winterstorm

Date: December 2006

Source: http://breezecourier.com/main.asp?SectionID=9&SubSectionID=514&TM=72307.78

FLOOD

Description: *Photo courtesy of Jerry Durbin PALMER – Due to the heavy rainfall and flash-flooding, Rt. 48 one mile north of Palmer was closed for approximately 45 minutes at 5 p.m. Monday. It was reported one vehicle was stalled in the roadway during this time and Joe Steele, Bear Creek Highway Commissioner, closed one of the township roads.*
File Name:Flood_May_2002
Event: Flash Flood
Date: May 202
Source:
http://breezecourier.com/main.asp?SectionID=9&SubSectionID=416&TP=8&UID=11610569

Appendix E: Historical Hazard Maps

-See Attached Map

Appendix F: List of Critical Facilities

Airport Facilities Report

ID	Name	Address	City	Class	Function	Capacity	YearBuilt	ReplaCost
1	TAYLORVILLE MUNI		TAYLORVIL	ADFLT	PUBLIC			10651

WasteWater Facilities Report

ID	Name	Address	City	Function	Class	Stories	YearBuilt	ReplaCost
1	ASSUMPTION STP	110 WEST SECOND STREET	ASSUMPTION		WDF			73926
2	CITY OF PANA	PEABODY MINE LAKE ROAD/118	PANA		WDF			73926
3	EDINBURG WWTP	WEST VINE STREET	EDINBURG		WDF			73926
4	KINCAID STP	EDINBURG AND SANGAMON	KINCAID		WDF			73926
5	MORRISONVILLE STP	CARRIE STREET	MORRISONVILLE		WDF			73926
6	MOWEAQUA STP	ROUTE 4	MOWEAQUA		WDF			73926
7	OAK TERRACE-	100 BEYERS LAKE ROAD	PANA		WDF			73926
8	SOUTH FORK SD STP	502 MIDLAND STREET	TOVEY		WDF			73926
9	STONINGTON STP	2050 NORTH MAIN STREET	STONINGTON		WDF			73926
10	TAYLORVILLE	1058 EAST LANGLEYVILLE ROAD	TAYLORVILLE		WDF			73926

User Defined Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
32	Mt. Auburn Elementary School	Arch & Maple	Mt. Auburn		SHELTER	1	1950	1155.2136
33	West Elementary School	300 N Elevator St	Taylorville		SHELTER	1	1955	2654.5333

Natural Gas Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
1	PANHANDLE EASTERN-	HYDROSTATIC TEST WATER	SANGAMON	GDFLT				1209.9

Potable Water Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
1	LATHAM WTP	111 PARK STREET	LATHAM					36963
2	HARVEL WTP	VILLAGE HALL	HARVEL					36963
3	MOWEAQUA WTP	R.R. #1	MOWEAQUA					36963
4	MT. AUBURN WTP	P.O. BOX 224	MT AUBURN					36963
5	PALMER WTP	P.O. BOX 89	PALMER					36963
6	PANA LAKESIDE WTP	THIRD AND POPLAR STREETS	PANA					36963
7	KINCAID WTP	P.O. BOX 615	KINCAID					36963
8	TAYLORVILLE WTP	2222 LINCOLN TRAIL	TAYLORVILLE					36963

Medical Care Facilities Report

ID	Name	Address	City	Class	Function	Beds	Stories	ReplaCost
1	PANA COMMUNITY	101 EAST NINTH STREET	PANA	EFHS	Hospital	15	3885	
2	ST VINCENT MEMORIAL	201 EAST PLEASANT STREET	TAYLORVILLE	EFHL	Hospital	152	15540	

Electric Power Facilities Report

ID	Name	Address	City	Class	Function	Stories	YearBuilt	ReplaCost
1	KINCAID GENERATION	WEST ROUTE 104	KINCAID	EDFLT				122100

EOC Facilities Report

ID	Name	Address	City	Class	YearBuilt	ShelterCap	Stories	ReplaCost
1	Pana City Civil Defense	120 E 3rd St	Pana	EFEO			2	$1,110
2	Taylorville EOC	202 N Main St	Taylorville	EFEO	2006		2	$2,300

FireStation Facilities Report

ID	Name	Address	City	Class	Stories	YearBuilt	ReplaCost
1	Edinburg FPD	107 W Douglas St.	Edinburg	EFFS	1		90
2	Mt. Auburn FPD	365 W Arch ST	Mt Auburn	EFFS	1		
3	Taylorville Fire Dept.	202 N Main st	Taylorville	EFFS	2	2007	2300
4	Stonington FPD	423 Walnut ST	Stonington	EFFS	1		
5	Assumpton Community FPD	217 N Chestnut	Assumption	EFFS	1	1985	385
6	Pana Fire Department	400 E First ST	Pana	EFFS	1	1976	14000
7	Morrisonville Palmer FPD	205 SE 5th	Morrisonville	EFFS	1		
8	Midland Fire Protection	200 Springfield ST	Kincaid	EFFS	1	2001	
10	Owaneco Fire Protection	105 N Locust St	Owaneco	EFFS	1	1974	471

Dams Report

ID	Name	River	City	Owner	Purpose	Height (ft)	ReplaCost
1	KINCAID CITY LAKE DAM	TRIB SOUTH FORK	TALORVILLE	Village of Kincaid	SR	37	
2	BERTINETTIS LAKE DAM	TRIB SOUTH FORK	TAYLORVILL	C. F. Bertinetti	R	29	
3	LAKE TAYLORVILLE DAM	SOUTH FORK SANGAMON	TAYLORVILL	City of Taylorville	SR	27	
4	PARAGON LAKE DAM	COAL CREEK	VANDALIA	Paragon Lake	R	20	
5	BOYD LAKE DAM	TRIB BEAR CREEK	TAYLORVILL	Leo Schilling	R	13	

6	LUSTERS LAKE DAM	TRIBBRUSH CREEK	TAYLORVILL	Russell G. Deal	R	22
7	PAWNEE CAPITAL GROUP	TRIB SANGCHRIS LAKE	PAWNEE	Pawnee Capital	O	37
8	PEABODY/ /SLURRY	CLEAR CREEK-OFFSTREAM	KINCAID-	Peabody Coal	O	30
9	PAWNEE CAPITAL GROUP	TRIB SANGCHRIS LAKE		Pawnee Capital	DS	20
10	LOCUST CREEK DETENTION	LOCUST CR	TAYLORVILL	CITY OF	C	15
11	MINE NO.10		PAWNEE	PEABODY COAL	T	40
12	THOMAS POND DAM #1	SOUTH TRIB-SANGAMON	ROBY	GEORGE THOMAS	RFO	25
13	OSTERMIER POND DAM #1	EAST TRIB-S. FORK	KINCAID	JOHN OSTERMEIR	CO	30

Police Station Facilities Report

ID	Name	Address	City	Class	Stories	ShelterCap	YearBuilt	ReplaCost
1	Taylorville Police Dept	108 W Vine St	Taylorville	EFPS				1554
2	Kincaid Police Dept	115 Central Ave	Kincaid	EFPS				1554
3	Pana Police Dept	118 E 3rd St	Pana	EFPS				1554
4	Edinburg Police Dept	201 W Washington St	Edinburg	EFPS				1554
5	Christian County Sheriff	301 W Franklin St	Taylorville	EFPS				1554
6	Stonington City Police Dept	416 N Main St	Stonington	EFPS				1554

School Facilities Report

ID	Name	Address	City	Class	Students	Stories	YearBuilt	ReplaCost
1	CENTRAL SCHOOL	515 E BIDWELL	TAYLORVILLE	EFS1	58	1		2116.2529
2	CENTRAL A & M MIDDLE	404 E COLEGROVE ST	ASSUMPTION	EFS1	231			3406.6511
3	BOND ELEMENTARY	105 N COLLEGE ST	ASSUMPTION	EFS1	164			2015.479
4	EDINBURG HIGH SCHOOL	100 E MARTIN ST	EDINBURG	EFS1	116			1995.8158
5	EDINBURG ELEM SCHOOL	100 E MARTIN ST	EDINBURG	EFS1	185			2273.5586
6	EDINBURG JR HIGH	100 E MARTIN ST	EDINBURG	EFS1	85			1253.5296
7	KEMMERER VILLAGE	404 E COLEGROVE ST	ASSUMPTION	EFS1	37			636.5964
8	TAYLORVILLE	PO BOX 1000	TAYLORVILLE	EFS1	18			309.6956
9	CHRISMONT SAFE	PO BOX 187	MORRISONVI	EFS1	23			395.7221
10	ST MARY SCHOOL	422 S WASHINGTON ST	TAYLORVILLE	EFS1	105	2		1954.0315
11	FIRST BAPTIST CHRISTIAN	114 S MAPLE ST	PANA	EFS1	140			2408.7432
12	KEMMERER VILLAGE	Assumption, IL 62510	ASSUMPTION	EFS1	29			498.9539
13	VISION WAY CHRISTIAN	1124 N. WEBSTER ST.	TAYLORVILLE	EFS1	133	1		1725.4467
14	SACRED HEART SCHOOL	3 EAST 4TH STREET	PANA	EFS1	138			2035.1422
17	SOUTH FORK JR SR HIGH	PO BOX 20	KINCAID	EFS1	201	2	1936	4370.1484
18	SOUTH FORK	PO BOX 20	KINCAID	EFS1	176	1	1930	2113.795
19	NORTH ELEM SCHOOL	805 N CHEROKEE ST	TAYLORVILLE	EFS1	440		1969	5074.3371
20	TAYLORVILLE JR HIGH	120 E BIDWELL ST	TAYLORVILLE	EFS1	652	1	1968	14226.3323
21	TAYLORVILLE SR HIGH	815 W SPRINGFIELD RD	TAYLORVILLE	EFS1	904	3	1935	21568.0832
22	SOUTH ELEM SCHOOL	1004 W PRAIRIE ST	TAYLORVILLE	EFS1	281	1	1969	3329.7188
24	MEMORIAL ELEM SCHOOL	101 E ADAMS ST	TAYLORVILLE	EFS1	300	2	1928	5969.0131

ID	Name	Address	City	Class	Students	Stories	YearBuilt	ReplaCost
26	STONINGTON ELEM	500 E NORTH ST	STONINGTON	EFS1	311	1		1769.6889
27	LINCOLN ELEM SCHOOL	PO BOX 377	PANA	EFS1	294	3	1922	4313.8624
28	PANA JR HIGH SCHOOL	PO BOX 377	PANA	EFS1	208	1	1958	3524.6303
29	PANA SR HIGH SCHOOL	PO BOX 377	PANA	EFS1	499	2	2000	9222.0454
30	WASHINGTON ELEM	PO BOX 377	PANA	EFS1	203	3	1992	3933.6251
31	MORRISONVILLE JR HIGH	PO BOX 13	MORRISONVI	EFS1	70			1032.3185
32	MORRISONVILLE HIGH	PO BOX 13	MORRISONVI	EFS1	121			2081.8423
33	MORRISONVILLE ELEM	PO BOX 13	MORRISONVI	EFS1	166			2040.058

Hazardous Materials

ID	Name	Address	City	Class	EPAID	ChemicalName
1	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	ARSENIC
2	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	BARIUM
3	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	CHROMIUM
4	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	COPPER
5	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	"HYDROCHLORIC
6	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	HYDROGEN
7	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	LEAD
8	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	MANGANESE
9	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	NICKEL
10	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	"SULFURIC ACID
11	DOMINION RESOURCES INC.	4 MILES W. OF KINCAID ON RTE. 104	KINCAID	HDFLT	ILD047028881	ZINC COMPOUNDS
12	ADM	RTE. 48 N.	TAYLORVILLE	HDFLT	ILD144324241	N-HEXANE

ID	Name	Address	City	Class	EPAID	ChemicalName
14	AHLSTROM FILTRATION	1200 E ELM ST	TAYLORVILLE	HDFLT		AMMONIUM
15	ASSUMPTION CO-OP GRAIN CO	104 W NORTH ST	ASSUMPTION	HDFLT		DIESEL FUEL
16	BECK TRANSPORTATION	407 S BAUGHMAN ROAD	TAYLORVILLE	HDFLT		DIESEL FUEL
17	CHRISTIAN COUNTY	378 N 2400 EAST RD	PANA	HDFLT		ATRAZINE
18	CHRISTIAN COUNTY	793 N 2500 EAST RD	PANA	HDFLT		ATRAZINE
19	CHRISTIAN COUNTY	498 N 500 EAST RD	MORRISONVILL	HDFLT		ATRAZINE
20	CHRISTIAN COUNTY	5 STATE ROUTE 48	STONINGTON	HDFLT		ATRAZINE
21	CHRISTIAN COUNTY	1210 N CHENEY ST	TAYLORVILLE	HDFLT		TOLUENE XYLENE
22	CHRISTIAN COUNTY FS -	365 N 2500 EAST RD	PANA	HDFLT		PROPANE
23	CHRISTIAN COUNTY FS -	686 IL ROUTE 29	OWANECO	HDFLT		ATRAZINE
24	CHRISTIAN COUNTY FS -	2 N SHERIDAN ST	PANA	HDFLT		HYDROCARBONS
25	CONSOLIDATED	216 N WEBSTER ST	TAYLORVILLE	HDFLT		SULFURIC ACID
26	CROP PRODUCTION SERVICES	450 EAST 400 NORTH RD	MORRISONVILL	HDFLT		ANHYDROUS
27	EFFINGHAM EQUITY	367 N 2500 EAST RD	PANA	HDFLT		ANHYDROUS
28	FERRELLGAS	500 N HICKORY ST	PANA	HDFLT		PETROLEUM GAS
29	HARDY FERTILIZER	S AUGAR ST	MT AUBURN	HDFLT		ANHYDROUS
30	IL CONSOLIDATED	100 E 5TH ST	PANA	HDFLT		SULFURIC ACID
31	MBM	600 S SPRESSER ST	TAYLORVILLE	HDFLT		DIESEL FUEL

Communication Facilities Report

ID	Name	Address	City	Class	Owner	Function	ReplaCost
1	KNEP496	2 MI N ON US 51 THEN 1 1/2 MI W	ASSUMP	CDFLT	ADCOCK,		0
2	WQIY520	1463 N RT 48	Taylorville	CDFLT	ADM Grain Co		0
3	WQIY520		Taylorville	CDFLT	ADM Grain Co		0
4	WQIY520		Taylorville	CDFLT	ADM Grain Co		0
5	WNWC598	S AUGUR ST	MOUNT	CDFLT	ADM Grain		0
6	WNWC598		MOUNT	CDFLT	ADM Grain		0
7	WNWC598		Mount	CDFLT	ADM Grain		0
8	WPLP347		TAYLOR	CDFLT	AHLSTROM		0
9	WPLP347	1200 E ELM ST	TAYLOR	CDFLT	AHLSTROM		0
10	KNFH532	1 MI W & 6 MI N	TAYLOR	CDFLT	ALAN JANSSEN		0
11	KEO45	4 MI S OF	TAYLOR	CDFLT	Ameren Services		0
12	KEY33	1/2 MI N OF	PANA	CDFLT	Ameren Services		0
13	KSE45	.5 MI N OF	PANA	CDFLT	Ameren Services		0
14	KSE60	6 1/2 MI S OF	TAYLOR	CDFLT	Ameren Services		0
15	KSF524	COR ESTHER & WILKINSON STS	TAYLOR	CDFLT	Ameren Services		0
16	KSF525	.5 MI N	PANA	CDFLT	Ameren Services		0
17	WQIV687	3.5 MI SE JCT IL RT 29 & 48 Near	Taylorville	CDFLT	Ameren Services		0
18	WNUU238			CDFLT	ASSUMPTION		0
19	WPLS491			CDFLT	ASSUMPTION,		0
20	WPLW512	110 W SECOND S	ASSUMP	CDFLT	ASSUMPTION,		0
21	WPLW512		ASSUMP	CDFLT	ASSUMPTION,		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
22	KNGH964	1 MI NE OF TOWNSHIP RD	OHLMAN	CDFLT	AUMANN,		0
23	KNAO200	1 MI W & 6 MI N OF MORRISONVILLE	TAYLOR	CDFLT	BANGERT,		0
24	WPMU958	407 BAUGHMAN ST	TAYLOR	CDFLT	BECK BUS		0
25	WPMU958		TAYLOR	CDFLT	BECK BUS		0
26	KNFY773	CORNER OF MAIN ST & RT 48	STONIN	CDFLT	BECK, LOWELL		0
27	WPFS544	3 MI S ON TOWNSHIP RD 600 N &	OWANE	CDFLT	BERNER, CARL		0
28	WPFS544		OWANE	CDFLT	BERNER, CARL		0
29	WQDZ985	700 EAST MARKET STREET	TAYLOR	CDFLT	BLAKLEY		0
30	WQDZ985		TAYLOR	CDFLT	BLAKLEY		0
31	WQDT281	402 WALNUT STREET	STONIN	CDFLT	BOLLINGER, TIM		0
32	WQDT281		STONIN	CDFLT	BOLLINGER, TIM		0
33	WPWD572	TAYLORVILLE AIRPORT	TAYLOR	CDFLT	BRIX, DALE		0
34	WPWD572		TAYLOR	CDFLT	BRIX, DALE		0
35	WNCC309	ONE MI W SIX MI N MORRISONVILLE	TAYLOR	CDFLT	BROCKELSBY		0
36	WNCC309		TAYLOR	CDFLT	BROCKELSBY		0
37	WNMW768	2 1/2 MI S & 1 MI E	STONIN	CDFLT	CALLAN, JOHN		0
38	WNMW768		STONIN	CDFLT	CALLAN, JOHN		0
39	WNGX337	1104 W SPRESSER ST	TAYLOR	CDFLT	CEFS		0
40	WNGX337		TAYLOR	CDFLT	CEFS		0
41	KNP358	105 N COLLEGE	ASSUMP	CDFLT	CENTRAL A & M		0
42	WNGM806	412 E 2050 NORTH RD	EDINBU	CDFLT	CHARLES		0
43	WNGM806		EDINBU	CDFLT	CHARLES		0
44	WPDZ875	301 W FRANKLIN ST	TAYLOR	CDFLT	CHRISTIAN		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
45	WPDZ876	301 W FRANKLIN ST	TAYLOR	CDFLT	CHRISTIAN		0
46	KZZ444	1 BLK W OF RT 48 SW CITY LIMITS	STONIN	CDFLT	CHRISTIAN		0
47	KZZ444	N ELIZABETH ST	PANA	CDFLT	CHRISTIAN		0
48	KZZ444	RT 104	TOVEY	CDFLT	CHRISTIAN		0
49	KZZ444	RT 1 .75 MI E	MORRIS	CDFLT	CHRISTIAN		0
50	KZZ444	DUNKEL STA RD 1 MI W RT 51 3 MI N	PANA	CDFLT	CHRISTIAN		0
51	KZZ444	3 MI S OF OWANECO ON RT 29	MILLERS	CDFLT	CHRISTIAN		0
52	KSS617	.5 MI N ON N CHENEY ST	TAYLOR	CDFLT	CHRISTIAN		0
53	WNPJ350	400 W FRANKLIN	TAYLOR	CDFLT	CHRISTIAN		0
54	WNPJ350		TAYLOR	CDFLT	CHRISTIAN		0
55	KSA961	8 KM W TAYLORVILLE RT 29	SHARPS	CDFLT	CHRISTIAN		0
56	KSA961	301 W FRANKLIN	TAYLOR	CDFLT	CHRISTIAN		0
57	KNJS390	115 N MAIN	TAYLOR	CDFLT	CHRISTIAN,		0
58	KNJS390		TAYLOR	CDFLT	CHRISTIAN,		0
59	KTA998	1000 N CHENEY ST	TAYLOR	CDFLT	CHRISTIAN,		0
60	KUF669	CHRISTIAN COUNTY	TAYLOR	CDFLT	CHRISTIAN,		0
61	WNJI379	301 W FRANKLIN	TAYLOR	CDFLT	CHRISTIAN,		0
62	WNJI379		TAYLOR	CDFLT	CHRISTIAN,		0
63	KCS7	TAYLORVILLE MUNICIPAL AIRPORT	TAYLOR	CDFLT	CITY OF		0
64	WSX42	ON IL RT 104 4 MI W OF	KINCAID	CDFLT	COMMONWEALT		0
65	KKB532	216 N. Webster	TAYLOR	CDFLT	Consolidated		0
66	KWH311	216 N. Webster	Taylorville	CDFLT	Consolidated		0
67	WPOT852	111 W MAIN CROSS	TAYLOR	CDFLT	COVENANT		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
68	KNCW422	1 BLOCK W OF CENTER OF	MOWEA	CDFLT	CRAIG		0
69	WNAD595	1 BLOCK EAST OF CENTER OF	MORRIS	CDFLT	CRAIG, LARRY		0
70	WNAD595		MORRIS	CDFLT	CRAIG, LARRY		0
71	WPUC732	3 Mi SE	Taylorville	CDFLT	Craig, Larry W		0
72	WPUC732		Taylorville	CDFLT	Craig, Larry W		0
73	WNNY901	1/2 MI W	ASSUMP	CDFLT	CREAMER,		0
74	WNNY901	1 MI SW	ASSUMP	CDFLT	CREAMER,		0
75	KKC502	RR 1 10 MI E	MORRIS	CDFLT	CROP		0
76	KKC502		MORRIS	CDFLT	CROP		0
77	KNHN452	VANDEVEER ST 1 BLK SW OF THE	MORRIS	CDFLT	CROP		0
78	KNHN452			CDFLT	CROP		0
79	KNAE578	1 MI W 6 MI N MORRISONVILLE	TAYLOR	CDFLT	DAMBACHER &		0
80	KNAE578		TAYLOR	CDFLT	DAMBACHER &		0
81	WPRA581	RT 29	SHARPS	CDFLT	DOWNS,		0
82	WPRA581		SHARPS	CDFLT	DOWNS,		0
83	KNCN879	2 1/2 MI E & 1/2 MI S	MORRIS	CDFLT	DOZIER, DUANE		0
84	WNPG288	1.5 MI W 5.5 MI N	MORRIS	CDFLT	DUNKIRK, GARY		0
85	WNPG288		MORRIS	CDFLT	DUNKIRK, GARY		0
86	WQIT800	305 E. MAIN CROSS	TAYLOR	CDFLT	DUNNS		0
87	WQIT800		TAYLOR	CDFLT	DUNNS		0
88	WNIK665	621 N CHEROKEE	TAYLOR	CDFLT	EBERT, WILLIAM		0
89	WNIK665		TAYLOR	CDFLT	EBERT, WILLIAM		0
90	WQAX928	FRANKLIN AND EATON STS	EDINBU	CDFLT	EDINBURG		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
91	WQAX928		EDINBU	CDFLT	EDINBURG		0
92	KNEM440	COR OF DOUGLAS & GRANT STS	EDINBU	CDFLT	EDINBURG FIRE		0
93	KNEM440		EDINBU	CDFLT	EDINBURG FIRE		0
94	KVG750	201 W WASHINGTON ST	EDINBU	CDFLT	EDINBURG,		0
95	KVG750		EDINBU	CDFLT	EDINBURG,		0
96	WPHW841	2 BLK E OF PANA ELEVATOR	PANA	CDFLT	EFFINGHAM		0
97	WPHW841		PANA	CDFLT	EFFINGHAM		0
98	WNWW454	4 MI N & 1.5 MI W	BLUE	CDFLT	ELDER, DONALD		0
99	WNWW454		BLUE	CDFLT	ELDER, DONALD		0
100	KNJB696	2514 E 500 NORTH RD	PANA	CDFLT	ERVIN HEBERT		0
101	KNJB696	1437 E 350 NORTH RD	NOKOMI	CDFLT	ERVIN HEBERT		0
102	KNJB696		NOKOMI	CDFLT	ERVIN HEBERT		0
103	KTO583	3/4 MI N OF RD 14 3 MI W	BLUE	CDFLT	EXPLORER		0
104	WPTE948	4 MI W 4 MI N	MORRIS	CDFLT	FESSER INC		0
105	WPTE948		MORRIS	CDFLT	FESSER INC		0
106	WRD479	2276 EAST 1600 NORTH RD	ASSUMP	CDFLT	FULK,		0
107	WRD479		ASSUMP	CDFLT	FULK,		0
108	WNJF479	ONE MI W AND SIX MI N OF	TAYLOR	CDFLT	GARRETT, BILL		0
109	WNJF479		TAYLOR	CDFLT	GARRETT, BILL		0
110	KGH556	INT OF RT 48 & EDINBURG	STONIN	CDFLT	GARWOOD		0
111	WGH292	1.7 MI E 0.7 MI S OF RT 48 & OLD	STONIN	CDFLT	GARWOOD		0
112	KNAJ712	5 MI W 1 MI N	MOWEA	CDFLT	GORDEN,		0
113	KNAJ712		MOWEA	CDFLT	GORDEN,		0

ID	Name	Address	City	Class	Owner	Function	ReplaCost
114	WNZF598	1 BLK WOF RT 51 CTR	MOWEA	CDFLT	GORDEN,		0
115	WNZF598		MOWEA	CDFLT	GORDEN,		0
116	WPLE334	E ILLINOIS ST 1/2 MI E OF US HWY	ASSUMP	CDFLT	GRAIN SYSTEMS		0
117	WPLE334		ASSUMP	CDFLT	GRAIN SYSTEMS		0
118	WQJA276	1004 E ILLINOIS STREET	ASSUMP	CDFLT	GRAIN SYSTEMS		0
119	WQJA276		ASSUMP	CDFLT	GRAIN SYSTEMS		0
120	KNAC424	1/2 MI N OF NORTH	OWANE	CDFLT	GRANT,		0
121	WNLG480	2 MI E AND 1 1/2 MI N	EDINBU	CDFLT	GREIVE,		0
122	WNLG480		EDINBU	CDFLT	GREIVE,		0
123	KRO579	ELM ST 200 FT S CITY LIMITS	MOUNT	CDFLT	HARDY		0
124	WPEY512	1 1/2 MI S 1/2 MI W	EDINBU	CDFLT	HIGGASON,		0
125	WPEY512		EDINBU	CDFLT	HIGGASON,		0
126	WNIK928	LEAFLAND AVE	ASSUMP	CDFLT	HILER, GEORGE		0
127	WPYD289	Ellis Depot	Ellis	CDFLT	ILLINOIS AND		0
128	KSA879	1.5 MI S & 2 MI W OF RT 1	BLUE	CDFLT	Illinois		0
129	KSF218	1.5 MI S & 2 MI W OF RT 1	BLUE	CDFLT	Illinois		0
130	WPRW835	216 N WEBSTER	TAYLOR	CDFLT	Illinois		0
131	WPRW835		TAYLOR	CDFLT	Illinois		
132	KNKN996	Approx. 4.63 miles South from the	Taylorville	CDFLT	Illinois RSA 6 and		
133	KNKN996	1South US Route 51	Pana	CDFLT	Illinois RSA 6 and		
134	KNKN996	CORNER OF MAIN CROSS ST &	TAYLOR	CDFLT	Illinois RSA 6 and		
135	KNKN996	212 East Masonic	Edinburg	CDFLT	Illinois RSA 6 and		
136	WPLZ224	4.8 KM SW	TAYLOR	CDFLT	ILLINOIS SIGNAL		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
137	WNSW517	3.5 MI SE OF JCT OF IL RTS 29 & 48	TAYLOR	CDFLT	ILLINOIS, STATE		
138	WNSW517	SECURITY OFC TAYLORVILLE CORR	TAYLOR	CDFLT	ILLINOIS, STATE		
139	WNSW517		TAYLOR	CDFLT	ILLINOIS, STATE		
140	WNUX989	3.5 MI SE OF JCT OF IL RTS 29 AND	TAYLOR	CDFLT	ILLINOIS, STATE		
141	WNUX989		TAYLOR	CDFLT	ILLINOIS, STATE		
142	WQCE618	3.5 MI SE JCT IL RT 29 & 48 NEAR	TAYLOR	CDFLT	ILLINOIS, STATE		
143	WQCE618		TAYLOR	CDFLT	ILLINOIS, STATE		
144	WQCK972	1144 IL RTE 29 SOUTH	TAYLOR	CDFLT	ILLINOIS, STATE		
145	WQCK972		TAYLOR	CDFLT	ILLINOIS, STATE		
146	WQHS402	1144 IL Rt 29 S	TAYLOR	CDFLT	Illinois, State of		
147	WQJE432	3.5 MI SE JCT IL RT 29 & 48 NEAR	TAYLOR	CDFLT	ILLINOIS, STATE		
148	WQHS402	1144 IL Rt 29 S	TAYLOR	CDFLT	Illinois, State of		
149	WQJK562	1/4 MI S OF IL RT 104 2 MI W	TAYLOR	CDFLT	JACK KENNEDY		
150	WQJK562		TAYLOR	CDFLT	JACK KENNEDY		
151	WYG882	1 MI E & .25 MI N CENTER	HARVEL	CDFLT	JOHNSON,		
152	WPYM709	918 Park Street	Taylorville	CDFLT	KASKASKIA		
153	WPYM710	APPX 5 1/2 MILES SOUTHEAST OF	CLARKS	CDFLT	KASKASKIA		
154	WPYY624	918 East Park Street	Taylorville	CDFLT	KASKASKIA		
155	KNNT571			CDFLT	KENNEDY &		
156	KNHS794	307 S CHESTNUT	PANA	CDFLT	KOONTZ,		
157	WPTF572	400 W FRANKLIN	TAYLOR	CDFLT	KRUMSIEK		
158	WPTF572		TAYLOR	CDFLT	KRUMSIEK		
159	WQJN799	800 S. SPRESSER STREET	TAYLOR	CDFLT	LINCOLN LAND		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
160	KNM287	3/4 MI S & 1 1/2 MI W	OWANE	CDFLT	LOCUST,		
161	WHS225	111 W. MAIN CROSS	TAYLOR	CDFLT	LONG NINE, INC.		
162	KDK203	SIXTH & CARLIN ST	MORRIS	CDFLT	LOUIS MARSCH		
163	WYQ969	1 MI W & 6 MI N	MORRIS	CDFLT	MACKAY, JAMES		
164	WYQ969		MORRIS	CDFLT	MACKAY, JAMES		
165	KGS569	4.75 MI W OF RT 48	BLUE	CDFLT	MC COY, JAMES		
166	KGS569		BLUE	CDFLT	MC COY, JAMES		
167	WPWG323	200 SPRINGFIELD STREET	KINCAID	CDFLT	MIDLAND FIRE		
168	WPWG323		KINCAID	CDFLT	MIDLAND FIRE		
169	WHS224	111 W MAIN CROSS	TAYLOR	CDFLT	MILLER		
170	WPOT231	111 W MAIN CROSS	TAYLOR	CDFLT	MILLER		
171	WPYP934	APPX 5 1/2 MILES SOUTHEAST OF	CLARKS	CDFLT	MILLER		
172	WPYY628		Taylorville	CDFLT	MILLER		
173	WPYY718		Clarksdale		CDFLT MILLER		
174	WQLA773	1/8MI SOUTH OF CO RD 2100N AND	MOWEA	CDFLT	MILLER,		
175	WQLA773		MOWEA	CDFLT	MILLER,		
176	WPAT338	TAYLORVILLE NOKOMIS RD 5 MI S	TAYLOR	CDFLT	MINER		
177	WPAT338		TAYLOR	CDFLT	MINER		
178	WNHJ312	RT 51 S	PANA	CDFLT	MOBIL OIL		
179	WPXP421	ROUTE 48	MORRIS	CDFLT	MORRISONVILLE		
180	KIM798	MORRISONVILLE GRADE SCHOOL	MORRIS	CDFLT	MORRISONVILLE		
181	WPGZ446	6TH ST & VANDEBEER	MORRIS	CDFLT	MORRISONVILLE		
182	WPGZ446		MORRIS	CDFLT	MORRISONVILLE		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
183	WQDE366	Rear of lot at 307 SE 6th Street	Morrison	CDFLT	MORRISONVILLE		
184	WQDE366		Morrison	CDFLT	MORRISONVILLE		
185	WQEU325	306 SIXTH STREET	MORRIS	CDFLT	MORRISONVILLE		
186	WQEU325		MORRIS	CDFLT	MORRISONVILLE		
187	WNDY352	CR 1900 E 2830 N	OSBERN	CDFLT	MOSQUITO,		
188	WNDY352		OSBERN	CDFLT	MOSQUITO,		
189	WPKL940			CDFLT	MOUNT AUBURN		
190	WPLF781	374 S BROAD ST	MOUNT	CDFLT	MOUNT AUBURN		
191	WPLF781		MOUNT	CDFLT	MOUNT AUBURN		
192	WQCB785		MOUNT	CDFLT	MOUNT		
193	WNFR586	ONE MI W SIX MI N MORRISONVILLE	TAYLOR	CDFLT	NATION FAMILY		
194	WNFR586		TAYLOR	CDFLT	NATION FAMILY		
195	WPTC569	CR1400 E	TAYLOR	CDFLT	NEXTEL WIP		
196	WPTC569		TAYLOR	CDFLT	NEXTEL WIP		
197	WPTC570	200 NORTH ROAD	PANA	CDFLT	NEXTEL WIP		
198	WPTC570		PANA	CDFLT	NEXTEL WIP		
199	WPWR519	2053 N. 600E	EDINBU	CDFLT	NEXTEL WIP		
200	WPWR519		EDINBU	CDFLT	NEXTEL WIP		
201	WQGN892	3 Mi SE	Taylorville	CDFLT	Nextel WIP		
202	WQGN892		Taylorville	CDFLT	Nextel WIP		
203	KNHL391	2 MI N & 1 1/4 MI W	BLUE	CDFLT	NOLAND FARMS		
204	KNHL391		BLUE	CDFLT	NOLAND FARMS		
205	KNJM230	ELEVATOR 100 WALNUT ST	STONIN	CDFLT	NOLEN,		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
206	KNJM230		STONIN	CDFLT	NOLEN,		
207	KNFX267	3.04 M AT 233.8 DEG FROM CENTER	MOUNT	CDFLT	Norfolk Southern		
208	KNFX275	5.53 M AT 122.5 DEG FROM THE INT	MORRIS	CDFLT	Norfolk Southern		
209	WAZ538	3.04 M AT 233.8' FROM CENTER SQR	MT	CDFLT	Norfolk Southern		
210	WAZ539	5.53 MI FROM THE INT OF SR 48 AND	MORRIS	CDFLT	Norfolk Southern		
211	WNFJ768	RAILROAD MP D 397.4	WILLEY	CDFLT	Norfolk Southern		
212	WNFJ768	RAILROAD MP D 409.4	CLARKS	CDFLT	Norfolk Southern		
213	WNFJ772	RAILROAD MP D 419.2	MORRIS	CDFLT	Norfolk Southern		
214	WQBA720	TR-198 RR crossing at MP D398.96	Stonington		CDFLT	Norfolk Southern	
215	WQBN757	TR129B RR crossing at MP D399.20	Stonington		CDFLT	Norfolk Southern	
216	WQIQ787	TR-54 RR CROSSING @ RR MP	MOORES	CDFLT	Norfolk Southern		
217	WQIQ787	TR-68 RR CROSSING @ RR MP	PALMER	CDFLT	Norfolk Southern		
218	WQKH902	CR-1900E RAILROAD CROSSING AT	Stonington		CDFLT	NORFOLK	
219	WQKG276	N. CHESTNUT STREET	ASSUMP	CDFLT	NOVARIANT,		
220	WQKG276		ASSUMP	CDFLT	NOVARIANT,		
221	WQLD395	149 COUNTY HIGHWAY 1	NOKOMI	CDFLT	NOVARIANT,		
222	WQLD395		NOKOMI	CDFLT	NOVARIANT,		
223	WQCB905	400 S ELIZABETH ST	TOVEY	CDFLT	OTTER LAKE		
224	WNGJ407	COR LINCOLN & DOUGLAS	OWANE	CDFLT	OWANECO FIRE		
225	WNGJ407		OWANE	CDFLT	OWANECO FIRE		
226	KWY217	202 SOUTH POPLAR STREET	PANA	CDFLT	PANA CITY OF		
227	KWY217		PANA	CDFLT	PANA CITY OF		
228	KAR754	END S LOCUST ST	PANA	CDFLT	PANA		

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229	WPCH568	14 E MAIN ST	PANA	CDFLT	PANA		
230	WPCH568		PANA	CDFLT	PANA		
231	KNEB768	3RD & POPLAR	PANA	CDFLT	PANA, CITY OF		
232	WQIP784	202 SOUTH POPLAR	PANA	CDFLT	PANA, CITY OF		
233	WQIP784		PANA	CDFLT	PANA, CITY OF		
234	KWH703	ROUTE 2 RAYMOND ST RD	PANA	CDFLT	PANA,		
235	WQCR516	RT 104	PAWNEE	CDFLT	PAWNEE		
236	KXZ362	RT 51 3.1 MI S	MOWEA	CDFLT	PC LTD		
237	KXZ362		MOWEA	CDFLT	PC LTD		
238	WQCI884	1001 NORTH CHENEY STREET	TAYLOR	CDFLT	PRESNELL		
239	WQCI884	2 NORTH WALNUT STREET	PANA	CDFLT	PRESNELL		
240	KNHB552	188 W. US HWY 51 S.	PANA	CDFLT	SENIOR		
241	KNHB552	701 W ADAMS ST	TAYLOR	CDFLT	SENIOR		
242	WQS732	7 MI N 2 MI W OF NORRISONVILLE	PAWNEE	CDFLT	SKINNER		
243	KZX656	4 MI W OF RT 29 1.5 MI N ON RT 4	PANA	CDFLT	SMITH, LARRY E		
244	KSM246	NE COR SPRINGFIELD & BEECH STS	KINCAID	CDFLT	SOUTH FORK,		
245	WNYT828	908 N CHENEY ST	TAYLOR	CDFLT	State of Illinois,		
246	WPDX295	4 1/8 MI NW ON RT 29	TAYLOR	CDFLT	STEPHENS,		
247	WPDX295		TAYLOR	CDFLT	STEPHENS,		
248	KOK268	RR 1 OR 1 1/2 MI SW	STONIN	CDFLT	STONINGTON		
249	WPKT247	1/2 MI E OF US 51 ON E ILLINOIS ST	ASSUMP	CDFLT	STRINGERS INC		
250	WPKT247		ASSUMP	CDFLT	STRINGERS INC		
251	KZZ496	327 N CLAY ST	TAYLOR	CDFLT	SUTTON, LARRY		

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252	KNGC406	2 MI N & 1/2 MI E	EDINBU	CDFLT	SWINGER,		
253	KUX770	201 E PLEASANT ST	TAYLOR	CDFLT	Taylorville		
254	KZZ270	201 E PLEASANT ST	TAYLOR	CDFLT	Taylorville		
255	WNAL838	201 E PLEASANT ST	TAYLOR	CDFLT	Taylorville		
256	WNIH641	201 E PLEASANT ST	TAYLOR	CDFLT	Taylorville		
257	WNIH641		TAYLOR	CDFLT	Taylorville		
258	WQCD254	254 EASTON AVE.	TAYLOR	CDFLT	Taylorville		
259	KNGN389	LANGLEYVILLE RD	TAYLOR	CDFLT	TAYLORVILLE,		
260	KNGN389		TAYLOR	CDFLT	TAYLORVILLE,		
261	KTT875	CITY HALL	TAYLOR	CDFLT	TAYLORVILLE,		
262	KTT875			CDFLT	TAYLORVILLE,		
263	KVJ478	1/4 MI E RT 48 LINCOLN TRAIL RD	TAYLOR	CDFLT	TAYLORVILLE,		
264	KVJ478	115 NORTH MAIN	TAYLOR	CDFLT	TAYLORVILLE,		
265	KVJ478		TAYLOR	CDFLT	TAYLORVILLE,		
266	WNBH402	115 N MAIN	TAYLOR	CDFLT	TAYLORVILLE,		
267	WNBH402		TAYLOR	CDFLT	TAYLORVILLE,		
268	WPPZ968	WATER TREATMENT PLANT 2222	TAYLOR	CDFLT	TAYLORVILLE,		
269	WPPZ968	BOOSTER STATION 3KM E OF	KINCAID	CDFLT	TAYLORVILLE,		
270	WPPZ968	TAYLORVILLE EL TANK 205 N	TAYLOR	CDFLT	TAYLORVILLE,		
271	WPPZ968	KINCAID EL TANK .3KM E OF	KINCAID	CDFLT	TAYLORVILLE,		
272	WPTS351	216 NORTH WEBSTER	TAYORV	CDFLT	TAYLORVILLE,		
273	WPTS351		TAYORV	CDFLT	TAYLORVILLE,		
274	WPTS351	3.5 MI SE OF JCT OF IL RTS 29 & 48	TAYLOR	CDFLT	TAYLORVILLE,		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
275	WQDI539	400 W FRANKLIN	TAYLOR	CDFLT	TAYLORVILLE,		
276	WQDI539		TAYLOR	CDFLT	TAYLORVILLE,		
277	WQDI539	202 N MAIN ST	TAYLOR	CDFLT	TAYLORVILLE,		
278	WQDI539	E SIDE OF ENTRANCE TO BOY	TAYLOR	CDFLT	TAYLORVILLE,		
279	WQDI539	W EDGE OF PARKING LOT @ LAKE	TAYLOR	CDFLT	TAYLORVILLE,		
280	WQDI539	E SIDE ON INT E LAKE SHORE DR	TAYLOR	CDFLT	TAYLORVILLE,		
281	WQDI539	SW OF E MAIN CROSS & WATER	TAYLOR	CDFLT	TAYLORVILLE,		
282	WQGH483	SE OF INT NORTH WEBSTER &	TAYLOR	CDFLT	TAYLORVILLE,		
283	WQGH483	SW CORNER OF INT W ELM & N	TAYLOR	CDFLT	TAYLORVILLE,		
284	WQGH483	E SIDE OF 910 S SHUMWAY ST	TAYLOR	CDFLT	TAYLORVILLE,		
285	WQGH483	SW CORNER OF INT AIRLAWN &	TAYLOR	CDFLT	TAYLORVILLE,		
286	WQGH483	202 N MAIN ST	TAYLOR	CDFLT	TAYLORVILLE,		
287	WQGH483		TAYLOR	CDFLT	TAYLORVILLE,		
288	WQKX765		TAYLOR	CDFLT	TAYLORVILLE,		
289	WRLB2250	TAYLORVILLE MUNICIPAL AIRPORT	TAYLOR	CDFLT	TAYLORVILLE,		
290	WXY5	TAYLORVILLE MUNICIPAL AIRPORT	TAYLOR	CDFLT	TAYLORVILLE,		
291	KUG770	1620 W SPRSSOR ST	TAYLOR	CDFLT	TAYLORVILLE,		
292	KEH343		PANA	CDFLT	THE CROMWELL		
293	WPQJ395			CDFLT	TOVEY, TOWN OF		
294	KSH771	NE JCT OF CRS	MOUNT	CDFLT	TRACY		
295	WQBD903	712 N. WEBSTER STREET	TAYLOR	CDFLT	TREASURE		
296	WPWH325	220' NW OF INT US 16 & S JOHNS ST.	PANA	CDFLT	UNION PACIFIC		
297	KGT690	ST RT 104 4.5 MI W	KINCAID	CDFLT	Virginia Electric		

ID	Name	Address	City	Class	Owner	Function	ReplaCost
298	KGT690		KINCAID	CDFLT	Virginia Electric		
299	KZZ356	STATE ROUTE 104 4 1/2 MILES WEST	KINCAID	CDFLT	Virginia Electric		
300	WNPZ809	4 MI W ON RT 104	KINCAID	CDFLT	Virginia Electric		
301	WNPZ809		KINCAID	CDFLT	Virginia Electric		
302	WNPZ809		KINCAID	CDFLT	Virginia Electric		
303	WPFS310	1 MI S	PALMER	CDFLT	WALTER,		
304	WPFS310		PALMER	CDFLT	WALTER,		
305	WNLH584	ONE MI W AND SIX MI N OF	TAYLOR	CDFLT	WEBER, LARRY		
306	WNLH584		TAYLOR	CDFLT	WEBER, LARRY		
307	KNCS371	1 BLOCK W OF RT 51 CENTER	MOWEA	CDFLT	ZINDEL,		
308	KNCS370	1 BLK W RT 51 CENTER OF	MOWEA	CDFLT	ZINDEL, RALPH		

Appendix G: Critical Facilities Maps

-See Attached Map

Appendix H: Flow Data for Christian County

Annual Peak Flows for USGS Gauging Stations in Christian County

USGS No.	5574000		5574500		5575000		5575500	
River	South Fork Sangamon River		Flat Branch		South Fork Sangamon River		South Fork Sangamon River	
Period of Record	1951-1982		1950-1982		1908-1916		1916-1992	
Latitude	39.35333		39.5525		39.507222		39.57889	
Longitude	89.251389		89.253889		89.346389		89.391944	
Rank	Year	Discharge (cfs)	Year	Discharge (cfs)	Year	Discharge (cfs)	Year	Discharge (cfs)
1	1957	8600	1957	13000	1916	9660	1957	21500
2	1970	6000	1979	11300	1915	7150	1979	17500
3	1979	3030	1950	9400	1911	4140	1917	14100
4	1973	2940	1970	8620	1908	3300	1943	13700
5	1966	2300	1974	7540	1912	2540	1922	13500
6	1958	2280	1951	7350	1909	2060	1926	13300
7	1977	2030	1968	5900	1910	1700	1958	11900
8	1974	1620	1973	5870			1969	11100
9	1951	1510	1959	5750			1985	10200
10	1968	1500	1982	5010			1916	9660